

National Bureau of Standards
Library, M. T. Bldg

Reference book not to be
taken from the Library.

AUG 6 1956

PART A
IONOSPHERIC DATA

ISSUED
JULY 1956

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

IONOSPHERIC DATA

CONTENTS

	<u>Page</u>
Symbols, Terminology, Conventions	2
Predicted and Observed Sunspot Numbers.	5
World-Wide Sources of Ionospheric Data.	5
Hourly Ionospheric Data at Washington, D. C.. . .	8, 9, 19, 30
Tables of Ionospheric Data.	9
Graphs of Ionospheric Data.	30
Index of Tables and Graphs of Ionospheric Data in CRPL-F143 (Part A).	60

SYMBOLS, TERMINOLOGY, CONVENTIONS

Beginning with data reported for January 1952, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Sixth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Geneva, 1951. Excerpts concerning symbols and terminology from Document No. 626-E of this Meeting are given on pages 2-7 of the report CRPL-F89, "Ionospheric Data," issued January 1952. Reprints of these pages are available upon request.

Beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given in Document No. 626-E referred to above, plus an additional symbol, R: "Scaling of characteristic is influenced or prevented by absorption in the neighborhood of the critical frequency," (May 1955). Also, beginning with January 1956, additional meanings are assigned to T: A smoothed value which better fits the observations, replacing a doubtful or clearly inconsistent observed value; and to U: $\text{foF2} - \text{foF1}$ is 0.5 Mc or less (used with (M3000)F2).

a. For all ionospheric characteristics:

Values missing because of A, C, F, L, M, N, Q, R, S, or T are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted usually as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count.

Values missing because of G are counted:

1. For foF2 , as equal to or less than foF1 .
2. For h'F2 , as equal to or greater than the median.

The symbol W is included in the median count only when it replaces a height characteristic; the symbol D, only when it replaces a frequency characteristic.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of E or G (and B when applied to the daytime E region only) are counted as equal to or less than the median foE, or equal to or less than the lower frequency limit of the recorder.

At night B for fEs is counted on the low side when there is a numerical value of foF2; otherwise it is omitted from the median count.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice

in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

- a. Differences in scaling records when spread echoes are present.
- b. Omission of values when f_oF_2 is less than or equal to f_oF_1 , leading to erroneously high values of monthly averages or median values.
- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily, a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of f_oE . Blank spaces at the beginning and end of columns of $h'F_1$, f_oF_1 , $h'E$, and f_oE are usually the result of diurnal variation in these characteristics. Complete absence of medians of $h'F_1$ and f_oF_1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

- a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.
- b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.
- c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

PREDICTED AND OBSERVED SUNSPOT NUMBERS

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot Number										
	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946
December		42	11	15	33	53	86	100	114	126	85
November	147	35	10	16	38	52	87	112	115	124	83
October	135	31	10	17	43	52	90	114	116	119	81
September	119	30	8	18	46	54	91	115	117	121	79
August	105	27	8	18	49	57	96	111	123	122	77
July	95	22	8	20	51	60	101	108	125	116	73
June	89	18	9	21	52	63	103	108	129	112	67
May	77	16	10	22	52	68	102	108	130	109	67
April	68	13	10	24	52	74	101	109	133	107	62
March	60	14	11	27	52	78	103	111	133	105	51
February	53	14	12	29	51	82	103	113	133	90	46
January	48	12	14	30	53	85	105	112	130	88	42

The latest available information follows concerning the corresponding observed Zürich numbers (some of which may be subject to minor change) beginning with the minimum of April 1954.

Observed Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	9	12
1955	14	16	19	23	29	35	40	46	55	64	72	80

WORLD - WIDE SOURCES OF IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 60 and figures 1 to 120 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Republica Argentina, Ministerio de Marina:
 Buenos Aires, Argentina
 Decepcion I.

Commonwealth of Australia, Department of the Interior:
 Macquarie I.

Australian Department of Supply and Shipping, Bureau of Mineral
 Resources, Geology and Geophysics:
 Watheroo, Western Australia

University of Graz:
 Graz, Austria

Meteorological Service of the Belgian Congo and Ruanda-Urundi:
 Elisabethville, Belgian Congo
 Leopoldville, Belgian Congo

British Department of Scientific and Industrial Research, Radio
 Research Board:
 Falkland Is.
 Inverness, Scotland
 Port Lockroy
 Singapore, British Malaya
 Slough, England

Defence Research Board, Canada:
 Baker Lake, Canada

Radio Wave Research Laboratories, National Taiwan University,
 Taipeh, Formosa, China:
 Formosa, China

French National Center for Telecommunications Studies:
 Tananarive, Madagascar

Institute for Ionospheric Research, Lindau Uber Northeim, Hannover,
 Germany:
 Lindau/Harz, Germany

Icelandic Post and Telegraph Administration:
 Reykjavik, Iceland

Ministry of Postal Services, Radio Research Laboratories, Tokyo,
 Japan:
 Akita, Japan
 Tokyo (Kokubunji), Japan
 Wakkanai, Japan
 Yamagawa, Japan

Christchurch Geophysical Observatory, New Zealand Department of
Scientific and Industrial Research:
Campbell I.

Norwegian Defence Research Establishment, Kjeller per Lillestrom,
Norway:
Tromso, Norway

Manila Observatory:
Baguio, P. I.

South African Council for Scientific and Industrial Research:
Capetown, Union of South Africa
Johannesburg, Union of South Africa
Nairobi, Kenya (East African Meteorological Department)

Research Institute of National Defence, Stockholm, Sweden:
Upsala, Sweden

Post, Telephone and Telegraph Administration, Berne, Switzerland:
Schwarzenburg, Switzerland

United States Army Signal Corps:
Adak, Alaska
Ft. Monmouth, New Jersey
Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):

Anchorage, Alaska
Fairbanks, Alaska (Geophysical Institute of the University of Alaska)
Guam I.
Huancayo, Peru (Instituto Geofisico de Huancayo)
Maui, Hawaii
Narsarssuak, Greenland
Point Barrow, Alaska
Puerto Rico, W. I.
San Francisco, California (Stanford University)
Talara, Peru (Instituto Geofisico de Huancayo)
Washington, D. C.

HOURLY IONOSPHERIC DATA AT WASHINGTON, D. C.

The data given in tables 61 through 71 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols, Terminology, Conventions." Beginning with September 1949, the data are taken at Ft. Belvoir, Virginia.

The interpretation of a cell is as follows: U F
32

The U is a weight meaning doubtful. Other weights are I, interpolated, D, greater than, and E, less than. Absence of a letter in the upper left position means full weight is given to the observation.

Symbols such as F above are given in the upper right position.

There should be no difficulty in the placing of the decimal point. For the time being, a final zero will be found in each value of foF1 and foE. Thus at a later date it will be possible to register more closely scaled values of these characteristics, whenever such are reported.

Table 1

Washington, O. C. (38.7°N, 77.1°W)							
June 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	270	6.2					3.5
01	280	5.8					3.3
02	270	5.3					3.5
03	280	4.9					3.7
04	280	4.4					3.9
05	270	4.4	280	----	129	----	3.0
06	320	5.1	230	3.80	111	2.40	4.0
07	380	5.6	220	4.30	105	2.90	5.8
08	430	5.7	210	4.70	103	3.20	6.4
09	430	6.1	210	4.90	101	3.40	5.0
10	420	6.2	200	5.00	101	3.50	6.8
11	470	6.1	205	5.00	101	3.60	5.0
12	470	6.2	210	5.20	101	3.80	5.2
13	460	6.4	205	5.10	101	3.80	5.4
14	430	6.6	210	5.00	101	3.80	4.8
15	430	6.6	220	5.00	103	3.60	4.6
16	400	6.9	220	4.90	105	3.40	5.0
17	360	7.0	230	4.60	109	3.10	3.6
18	320	7.2	240	4.10	110	2.60	3.8
19	280	7.0	260	----	121	1.80	3.4
20	250	7.4					4.4
21	260	7.2					3.6
22	270	6.8					4.9
23	280	6.4					3.7

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 2

Upsala, Sweden (59.8°N, 17.6°E)							
May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	290	5.7					2.7
01	300	5.1					2.7
02	300	5.0					2.7
03	300	5.0	----	----	----	E	2.7
04	320	5.6	270	3.2	130	1.85	1.8
05	335	5.9	260	3.75	115	2.25	2.8
06	360	6.3	240	4.2	110	2.7	2.8
07	370	6.6	240	4.6	110	3.0	2.8
08	360	7.1	230	4.8	110	3.2	3.3
09	350	7.7	230	4.9	110	3.3	3.4
10	355	7.7	230	5.1	105	3.35	2.8
11	350	7.9	220	5.2	105	3.4	2.8
12	350	7.8	220	5.2	105	3.5	2.8
13	355	8.0	220	5.1	105	3.45	2.8
14	350	7.9	220	5.1	105	3.4	2.8
15	350	7.6	230	5.0	105	3.2	2.8
16	340	7.9	240	4.9	105	3.1	2.8
17	300	7.3	240	4.5	110	2.9	2.9
18	290	7.3	250	4.0	115	2.6	2.8
19	275	7.3	260	3.5	120	2.1	2.5
20	260	7.4	----	----	----	1.5	2.0
21	265	6.9				E	2.9
22	280	6.4					2.8
23	290	6.2					2.7

Time: 15.0°E.
Sweep: 1.4 Mc to 17.0 Mc in 6 minutes, automatic operation.

Table 3

Adak, Alaska (51.9°N, 176.6°W)							
May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	310	5.2					2.55
01	310	4.8					2.5
02	310	4.7					2.55
03	330	4.5					2.55
04	360	4.5	330	(2.8)	----	----	1.1
05	430	5.4	270	3.6	125	(2.4)	2.4
06	430	6.2	250	4.1	111	(2.7)	3.0
07	420	6.8	240	4.3	106	(3.1)	3.3
08	420	6.6	225	4.7	103	----	4.5
09	440	6.3	220	4.8	101	----	4.7
10	445	6.1	215	4.9	101	----	4.5
11	470	6.2	215	5.0	101	----	4.8
12	510	6.1	220	5.0	101	----	4.4
13	460	6.1	220	5.0	101	----	4.0
14	440	6.2	220	5.0	103	----	3.8
15	420	6.2	230	4.9	105	(3.4)	4.2
16	380	6.3	235	4.8	109	(3.2)	2.7
17	340	6.4	250	(4.5)	109	(2.9)	3.0
18	310	6.5	260	----	115	(2.7)	3.5
19	280	6.8			130	----	2.8
20	260	6.6					2.5
21	270	6.8					2.4
22	270	6.4					1.5
23	290	5.8					1.2

Time: 180.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 4

Graz, Austria (47.1°N, 15.5°E)							
May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	320	7.0					2.5
01	330	6.8					2.55
02	320	6.2					2.55
03	325	6.1					2.55
04	300	5.9					2.55
05	275	6.1		(3.2)			2.45
06	270	6.4	250	4.3			2.5
07	295	6.8	250	4.8			2.55
08	310	7.6	230	4.9			2.6
09	320	7.9	230	5.1	----	(3.8)	2.55
10	330	8.4	230	5.1	----	(3.9)	2.6
11	345	8.8	230	5.2	----	(4.0)	2.55
12	340	9.0	220	5.3	----	(4.1)	2.5
13	330	9.0	220	5.2	----	(4.0)	2.65
14	330	9.4	230	5.2	----	(3.9)	2.6
15	330	9.2	230	5.1	----	(3.8)	2.65
16	305	8.8	230	5.1			2.7
17	295	8.5	250	4.7			2.8
18	255	8.6					2.9
19	260	8.4					2.5
20	270	8.3					2.85
21	270	8.1					2.7
22	300	7.5					1.5
23	310	7.3					1.2

Time: 15.0°E.
Sweep: 2.5 Mc to 12.0 Mc in 2 minutes.

Table 5

Ft. Monmouth, New Jersey (40.3°N, 74.1°W)							
May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	285	6.2					3.5
01	290	5.8					3.6
02	280	5.4					(3.1)
03	290	(4.9)					(4.0)
04	290	(4.5)					(2.7)
05	270	4.8	----	----	----	----	1.9
06	260	5.6	245	3.8	111	2.6	2.4
07	305	6.2	230	4.3	111	(3.0)	3.2
08	360	6.4	220	4.7	109	(3.3)	3.5
09	390	6.8	210	4.9	109	(3.5)	3.6
10	370	7.0	200	5.1	109	(3.7)	3.8
11	380	7.0	210	5.2	109	(3.8)	3.9
12	380	7.3	210	5.4	109	(3.8)	3.8
13	380	7.2	210	5.4	109	(3.9)	3.6
14	390	7.4	220	5.3	109	(3.7)	3.9
15	360	7.6	220	5.0	109	3.5	3.7
16	325	7.7	220	4.7	109	(3.3)	3.3
17	320	7.8	240	4.4	115	3.0	3.0
18	280	8.1	255	----	117	(2.5)	2.6
19	260	8.1					3.6
20	250	7.8					2.8
21	260	7.5					(4.4)
22	280	7.0					(5.2)
23	280	(6.6)					3.9

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 6

Ukinawa I. (26.3°N, 127.8°E)							
May 1956							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	290	12.6					3.6
01	270	12.3					4.3
02	260	10.8					3.8
03	260	8.7					3.0
04	260	8.2					2.7
05	250	7.5					3.4
06	260	8.0			133	(1.9)	3.3
07	240	8.6	240	----	114	(2.6)	4.8
08	(250)	8.8	230	----	111	(3.2)	5.7
09	----	9.3	225	----	111	(3.5)	7.0
10	----	10.2	220	----	111	(3.8)	7.0
11	370	11.2	<220	----	111	(3.9)	7.0
12	350	12.6	215	----	111	(4.0)	7.2
13	350	13.4	230	----	111	(4.0)	6.5
14	350	14.0	230	----	111	(3.9)	6.5
15	340	14.2	225	----	111	3.7	6.4
16	330	14.5	230	----	111	(3.5)	5.7
17	300	14.8	240	----	111	(3.2)	5.6
18	280	13.7	250	----	117	(2.5)	5.2
19	260	13.3					4.6
20	260	12.0					3.8
21	300	12.4					3.7
22	320	11.8					3.3
23	300	12.5					4.1

Time: 135.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 7

Formosa, China (25.0°N, 121.5°E)

May 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	13.5					3.2	2.8
01	280	12.8					3.2	2.9
02	280	12.4					3.2	2.8
03	---	---					---	---
04	---	---					---	---
05	---	---					---	---
06	---	---					---	---
07	---	---					---	---
08	260	9.7	240	---	120	3.4	5.9	2.8
09	(300)	10.5	230	---	120	3.6	6.1	2.7
10	(340)	11.2	---	---	---	---	6.4	2.5
11	360	12.6	---	5.8	---	---	5.8	2.7
12	370	13.5	---	5.9	---	---	5.6	2.7
13	360	14.1	---	5.8	---	---	<5.2	2.7
14	340	15.2	---	---	---	---	<5.2	2.7
15	320	>16.4	240	5.4	---	---	4.5	2.7
16	(300)	>16.2	240	---	120	---	4.0	2.7
17	280	15.9	260	---	---	---	3.9	2.8
18	280	15.3					3.8	2.8
19	280	14.3					3.8	2.9
20	310	>13.7					3.1	2.7
21	320	14.2					2.8	2.6
22	320	>12.8					2.8	2.6
23	300	>13.5					3.0	(2.7)

Time: 120.0°E.

Sweep: 1.1 Mc to 19.5 Mc in 15 minutes, manual operation.

Table 8

Tromsø, Norway (69.7°N, 19.0°E)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	(5.15)					3.4	(2.40)
01	---	(5.30)					3.4	(2.40)
02	(360)	(4.90)			---	---	2.9	(2.40)
03	(340)	(4.80)			---	---	2.7	(2.45)
04	(300)	5.40			---	---	3.0	2.60
05	---	5.50	---	---	---	1.85	---	(2.55)
06	---	6.25	260	---	115	2.15	---	(2.75)
07	(450)	6.30	250	---	110	2.65	---	(2.70)
08	(445)	6.85	245	---	110	2.90	---	2.60
09	---	7.00	245	---	110	2.90	---	2.70
10	(380)	7.80	245	5.00	110	3.10	---	2.70
11	360	8.05	240	4.80	110	3.10	3.1	2.70
12	390	8.45	240	4.70	110	3.10	---	2.70
13	400	8.30	240	4.70	105	3.10	---	2.70
14	385	7.90	245	4.55	110	3.05	---	2.70
15	(380)	7.60	245	---	110	3.00	---	2.70
16	(280)	6.70	250	---	110	2.80	---	2.70
17	(260)	6.60	255	---	110	2.60	<2.7	2.90
18	(260)	6.40	---	---	115	2.35	<3.7	2.90
19	280	6.50			---	---	4.0	2.80
20	(295)	5.95			---	---	3.2	2.70
21	(300)	5.60					3.1	(2.70)
22	---	(5.30)					3.2	(2.40)
23	---	(5.20)					3.2	(2.60)

Time: 15.0°E.

Sweep: 0.7 Mc to 25.0 Mc in 5 minutes, automatic operation.

Table 9

Fairbanks, Alaska (64.9°N, 147.8°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(4.4)					4.4	(2.60)
01		(5.0)					4.9	(2.60)
02		(4.7)					4.9	(2.55)
03		(4.6)					4.6	(2.60)
04		(5.0)			---	---	4.5	(2.60)
05		(5.5)			---	---	4.0	(2.60)
06		(3.4)		(3.6)	111	2.3	2.3	(2.60)
07		(5.4)		(4.0)	111	(2.8)	---	(2.50)
08		(5.4)		(4.2)	111	2.9	---	(2.55)
09		(5.8)		(4.4)	111	(3.1)	---	(2.60)
10		(6.0)		(4.6)	111	(3.2)	---	(2.60)
11		6.1		(4.6)	111	(3.2)	---	2.60
12		6.4		(4.7)	111	(3.2)	---	2.65
13		6.6		(4.8)	111	3.2	---	2.65
14		6.8		(4.7)	111	(3.2)	---	2.65
15		6.8		(4.5)	111	(3.0)	---	2.70
16		7.3		---	111	2.8	---	2.80
17		(7.0)		---	117	2.5	---	(2.85)
18		(6.8)		---	116	(2.2)	---	(2.90)
19		(6.2)		---	123	---	1.8	(3.00)
20		(5.6)		---	---	---	3.1	(2.90)
21		(5.2)					3.5	(2.90)
22		(5.2)					3.6	(2.80)
23		(4.5)					4.2	(2.70)

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 10

Anchorage, Alaska (61.2°N, 149.9°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		3.9						2.45
01		4.0					2.1	2.50
02		3.8					1.1	2.45
03		4.2					---	2.45
04		4.4					---	2.45
05		4.5		3.20	137	2.00	---	2.45
06		5.1		3.60	129	2.30	---	2.50
07		5.5		4.00	121	2.60	---	2.50
08		5.9		4.30	119	(2.80)	---	2.50
09		6.0		4.40	117	(3.00)	---	2.50
10		6.1		4.60	115	(3.10)	---	2.55
11		6.4		4.80	115	3.20	---	2.60
12		6.4		4.80	115	(3.40)	---	2.50
13		6.4		4.80	115	(3.30)	---	2.55
14		6.7		4.80	117	(3.10)	---	2.55
15		7.0		4.80	114	(3.00)	---	2.65
16		7.0		4.50	119	(2.80)	---	2.70
17		7.4		---	121	2.50	---	2.75
18		6.8		---	131	2.10	---	2.80
19		6.7		---	---	(1.80)	---	2.80
20		5.8					---	2.80
21		5.4					---	2.75
22		4.2					---	2.70
23		4.1					---	2.50

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 11

Narsarsuaq, Greenland (61.2°N, 45.4°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		(4.6)					4.3	(2.70)
01		---					3.8	---
02		---					4.3	---
03		---					4.2	---
04		---			---	---	4.4	---
05		(5.0)			---	---	4.0	(2.90)
06		(5.4)			111	2.5	3.8	(3.00)
07		(5.9)			109	2.8	3.2	2.90
08		(6.2)		(4.4)	109	3.0	---	(2.90)
09		6.2		(4.5)	111	3.2	---	(2.75)
10		6.6		(4.6)	109	(3.3)	---	2.70
11		6.8		4.9	109	3.5	---	2.65
12		(7.0)		(5.0)	109	(3.5)	---	(2.60)
13		(7.4)		(4.7)	109	(3.4)	---	(2.70)
14		(7.3)		4.7	108	(3.3)	---	(2.70)
15		(7.3)		(4.5)	109	3.2	---	(2.70)
16		(6.7)		(4.5)	109	3.0	---	(2.80)
17		(6.6)		---	111	2.7	3.0	(2.80)
18		(6.4)		---	115	2.7	4.0	(2.90)
19		(6.0)		---	123	2.2	4.0	(2.80)
20		---			---	---	4.2	---
21		---					4.8	---
22		---					4.5	---
23		---					4.4	---

Time: 45.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 12

Maui, Hawaii (20.8°N, 156.5°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	10.0						2.80
01	270	9.4					2.2	2.85
02	260	8.3					---	2.90
03	260	6.8					1.8	2.80
04	270	6.4					1.9	2.65
05	270	5.9					2.0	2.70
06	290	6.0	---	---	---	---	3.1	2.75
07	250	8.3	240	---	118	2.4	4.1	3.00
08	250	10.1	230	---	111	3.0	5.6	2.90
09	260	11.2	225	---	109	3.4	5.8	2.70
10	280	12.4	215	5.0	109	3.8	5.6	2.60
11	340	13.2	210	---	109	3.8	5.4	2.60
12	330	14.4	220	---	109	4.0	5.8	2.65
13	350	15.2	230	5.6	109	4.0	5.6	2.70
14	350	15.6	230	(5.9)	109	3.9	4.6	2.70
15	320	15.3	230	5.9	109	3.8	5.3	2.70
16	320	14.9	240	---	109	3.5	5.0	2.70
17	290	14.3	250	---	117	3.0	4.4	2.80
18	260	13.6	---	---	121	2.2	4.2	2.85
19	260	13.2					4.2	2.80
20	260	12.7					4.1	2.70
21	270	12.0					3.8	2.70
22	270	11.2					4.2	2.70
23	280	10.8					2.6	2.80

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 13

Puerto Rico, W. I. (18.5°N, 67.2°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	9.5					(4.1)	2.90
01	270	8.8					3.1	2.95
02	250	8.2					3.3	2.90
03	250	7.0					3.1	2.75
04	270	6.6					(2.8)	2.75
05	290	6.2					(3.4)	2.70
06	280	6.4					(2.2)	2.75
07	240	8.5	270	---	111	<2.5		3.05
08	250	10.0	230	---	109	<3.0		3.05
09	280	11.2	230	4.8	109	3.4		2.95
10	280	12.0	220	5.1	109	<3.8		2.85
11	305	12.3	220	5.3	109	<4.0		2.80
12	305	13.0	220	5.5	109	(4.0)		2.80
13	320	13.1	220	5.4	(111)	(4.0)		2.75
14	320	12.8	220	5.1	112	4.0		2.75
15	305	12.6	230	5.0	111	3.8	4.6	2.70
16	290	12.2	240	---	111	3.4	4.6	2.70
17	250	11.7	240	---	115	<3.0	4.2	2.70
18	250	11.4	265	---			3.4	2.75
19	250	10.7					2.8	2.80
20	270	10.4					3.5	2.75
21	280	9.8					3.5	2.75
22	290	9.5					(3.7)	2.75
23	280	9.8						2.80

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 15

Talara, Peru (4.6°S, 81.3°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	10.5					3.3	2.90
01	230	9.7					3.3	2.90
02	240	9.5						2.95
03	240	8.6						3.05
04	240	7.9					1.5	3.00
05	250	6.6					2.1	3.00
06	250	5.8					2.7	3.00
07	260	8.6			131	2.2	3.8	2.95
08	250	10.9	240	---	119	3.1	4.6	2.85
09	---	11.8	230	---	114	3.5	5.2	2.60
10	---	12.2	220	---	113	3.8	6.6	2.40
11	---	12.0	215	---	111	4.0		2.35
12	---	12.0	210	4.9	111	4.0	5.4	2.25
13	(270)	12.3	210	5.1	109	4.1	5.0	2.20
14	(260)	12.7	200	4.9	109	3.9	5.6	2.25
15	(250)	12.8	210	---	111	3.6	6.0	2.35
16	230	12.8	220	---	111	3.3	6.2	2.35
17	250	12.5			113	2.8	5.5	2.30
18	280	(12.5)					6.2	2.30
19	350	(12.1)					4.5	(2.20)
20	360	(11.7)					4.0	2.30
21	290	(11.6)					4.5	(2.50)
22	240	(11.5)					5.5	(2.80)
23	220	11.2					3.3	2.90

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 17

Baker Lake, Canada (64.3°N, 96.0°W)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		5.0			---	E	<1.5	2.7
01		4.6			---	E	<1.5	2.7
02		5.0			---	E	<1.3	2.8
03		4.0			---	E	<1.6	2.65
04		3.6			---	E	<1.2	2.8
05		3.7			145	1.2	2.6	2.7
06		3.6			120	1.8	1.8	2.7
07		4.2			120	2.2	2.2	2.85
08		4.6		3.8	110	2.5	2.6	2.95
09		5.0		4.0	110	2.8	2.8	2.95
10		5.4		4.2	110	3.1	3.2	2.65
11		6.0		4.3	110	3.2	3.2	2.8
12		6.8		4.4	110	3.1		2.75
13		8.0		4.3	110	3.1	3.1	2.75
14		8.0		4.2	110	3.1		2.8
15		7.0		4.2	110	2.9	2.9	2.6
16		6.8		4.0	110	2.7		2.7
17		6.5		3.8	115	2.3	2.3	2.8
18		6.1			115	2.0	2.2	2.9
19		5.5			120	1.8	2.0	2.8
20		5.3			125	1.4	2.4	2.7
21		5.1			155	1.2	<2.4	2.8
22		5.2			---	---	3.0	2.7
23		5.0			---	E	3.0	2.75

Time: 90.0°W.

Sweep: March 1 through 6: 0.6 Mc to 15.0 Mc in 16 seconds.
March 7 through 31: 1.0 Mc to 16.0 Mc in 16 seconds.

Table 14

Guam I. (13.6°N, 144.9°E)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	14.4						3.15
01	240	13.0						3.20
02	225	10.0						3.10
03	230	8.8						3.00
04	230	8.2					1.8	3.10
05	230	6.7					2.1	3.10
06	240	6.6					2.5	3.00
07	240	9.3			117	2.20		3.2
08	---	11.4	230		111	3.00	3.4	2.90
09	---	12.4	220		111	3.40	3.8	2.70
10	---	12.6	<220		111	3.60		2.45
11	---	13.0	210		111	3.80		2.30
12	---	12.6	210		111	(3.80)		2.30
13	---	13.0	215		111	3.90		2.30
14	---	13.4	210		111	3.80		2.30
15	---	13.4	220		111	3.60		2.35
16	---	14.0	230		111	3.30		2.40
17	---	14.0	240		113	2.90		2.45
18	260	13.5	---		121	2.10	2.8	2.50
19	305	12.9					2.1	2.40
20	380	12.4						2.30
21	320	12.1					2.0	2.45
22	290	12.8					2.0	2.65
23	260	13.0					2.1	3.00

Time: 150.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 16

Huancayo, Peru (12.0°S, 75.3°W)

April 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	9.0						3.00
01	220	8.2					3.8	3.00
02	230	7.2					3.6	3.10
03	240	6.7					3.5	3.15
04	240	5.9					2.1	3.10
05	250	5.0						3.15
06	270	6.0					4.8	2.90
07	250	9.6			119	2.5	8.2	3.00
08	(240)	11.8	230	---	111	3.2	10.6	2.85
09	---	13.0	220	---	107	---	12.5	2.60
10	(270)	12.9	210	---	105	---	12.8	2.40
11	---	12.4	200	---	105	---	13.6	2.30
12	---	12.3	200	---	105	---	13.2	2.25
13	(270)	11.8	200	---	105	---	13.2	2.30
14	---	11.8	200	---	103	---	13.0	2.25
15	(210)	11.8	200	---	105	---	12.5	2.25
16	240	11.8	230	---	107	3.2	12.0	2.25
17	260	11.6			111	2.6	9.5	2.25
18	300	11.2			150	1.7		2.25
19	380	10.2						2.15
20	330	9.7						2.35
21	280	9.6						2.60
22	240	9.4						2.85
23	230	9.0						2.95

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 18

Lindau/Harz, Germany (51.6°N, 10.1°E)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	5.0					1.90	2.6
01	305	4.8					2.15	2.7
02	300	4.6					2.15	2.7
03	280	4.4					2.10	2.75
04	280	4.25					2.20	2.7
05	270	3.45					2.10	2.8
06	270	4.0			---	E	2.45	3.0
07	250	5.75			120	1.85	2.80	3.3
08	240	7.35	235		110	2.5	3.00	3.3
09	250	8.05	225		100	2.9	3.35	3.2
10	260	9.85	215		100	3.15	3.75	3.2
11	250	10.2	215		100	3.25	3.85	3.2
12	260	10.6	210		100	3.35	3.90	3.1
13	255	10.8	215		100	3.35	3.75	3.2
14	250	10.75	215		100	3.35	3.65	3.2
15	250	10.2	225		100	3.2	3.50	3.2
16	240	10.05	230		105	2.9	3.35	3.2
17	240	10.0	230		110	2.5	3.10	3.2
18	230	9.65			125	1.85	2.75	3.2
19	230	9.0			---	E	2.40	3.2
20	230	7.8					2.40	3.1
21	240	6.8					2.20	2.95
22	270	6.1					1.90	2.8
23	280	5.65					2.15	2.8

Time: 15.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 19

Schwarzenburg, Switzerland (46.8°N, 7.3°E)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.0						2.9
01	300	5.0						2.9
02	300	5.0						3.0
03	300	4.8						3.0
04	285	4.6						3.05
05	270	4.2						3.2
06	270	4.0						3.2
07	220	5.4			100	2.0		3.5
08	200	7.8			100	2.4		3.55
09	200	9.2			100	2.8		3.5
10	200	9.6			100	3.1		3.5
11	200	10.6			100	3.2		3.5
12	200	11.0			100	3.4		3.5
13	200	11.0			100	3.4		3.5
14	200	11.0			100	3.4		3.45
15	200	11.0			100	3.3		3.5
16	200	10.5			100	3.0		3.4
17	200	10.0			100	2.7		3.5
18	200	10.0			100	2.1		3.5
19	200	9.0						3.5
20	200	8.0						3.5
21	210	6.9						3.4
22	240	6.0						3.3
23	260	6.0						3.1

Time: 15.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 21

Leopoldville, Belgian Congo (4.4°S, 15.2°E)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	11.0						2.7
01	230	9.5						2.7
02	235	8.0						2.8
03	230	6.9						1.6
04	220	4.0						1.7
05	250	5.0	---	---	---	---		2.5
06	250	8.8	240	---	120	2.6		3.2
07	255	10.2	230	---	110	3.2		3.4
08	265	11.0	220	---	110	3.6		2.5
09	300	11.5	220	---	110	3.8		2.4
10	390	13.2	210	---	110	---		2.4
11	400	>13.6	225	---	110	4.0		2.4
12	380	>14.0	230	---	110	4.0		2.4
13	380	15.5	230	---	110	4.0		<2.5
14	365	>14.0	230	---	110	3.6		<2.5
15	360	>14.0	240	---	110	3.3		<2.5
16	335	>14.0	250	---	115	2.6		3.0
17	310	---	270	---				2.4
18	305	---						2.4
19	290	>14.0						---
20	225	>14.0						---
21	220	>16.0						<3.0
22	215	>16.0						2.9
23	220	>13.8						2.9

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 23

Elisabethville, Belgian Congo (11.6°S, 27.5°E)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	6.1						2.6
01	250	5.6						2.6
02	250	5.2						2.7
03	240	4.2						1.6
04	260	4.4						1.8
05	245	8.2	240	---	120	2.3		2.3
06	250	10.3	230	---	110	3.0		3.4
07	270	11.1	220	---	110	3.5		3.7
08	280	>11.7	225	---	110	3.8		4.0
09	305	12.0	225	---	110	3.9		2.5
10	320	13.0	220	---	110	4.0		2.5
11	340	13.6	230	---	110	4.0		2.5
12	330	13.6	240	---	110	3.9		2.5
13	320	13.6	240	---	110	3.8		4.5
14	310	13.3	250	---	110	3.4		4.2
15	305	13.2	250	---	115	2.9		4.0
16	270	13.0	260	---	---	2.0		3.2
17	260	13.2						2.8
18	260	13.3						2.6
19	235	12.6						2.1
20	225	>11.5						2.8
21	235	11.0						2.8
22	230	10.0						2.8
23	225	8.8						2.8

Time: 0.0°.

Sweep: 1.0 Mc to 16.0 Mc in 7 seconds.

Table 20

Baguio, P. I. (16.4°N, 120.6°E)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	13.6						3.20
01	230	13.1						3.20
02	220	11.0						3.30
03	220	8.3						3.20
04	230	6.3						3.00
05	240	5.4						2.0
06	270	6.0						2.6
07	250	9.1			121	2.4		3.3
08	240	11.2	235	---	115	3.1		4.0
09	(270)	12.7	230	---	111	3.5		4.3
10	---	13.4	220	---	111	(3.8)		4.5
11	---	13.3	210	---	111	(3.9)		2.40
12	---	12.8	210	---	111	(4.0)		2.30
13	(290)	13.0	205	---	111	(3.9)		2.30
14	---	13.0	220	---	111	(3.8)		3.9
15	---	13.5	230	---	111	3.5		5.1
16	240	13.9	240	---	113	3.1		4.2
17	250	13.7			119	2.6		3.3
18	280	13.8						1.6
19	350	13.0						2.35
20	330	(12.9)						(2.55)
21	270	(12.9)						(2.80)
22	240	13.5						2.90
23	240	13.9						3.05

Time: 120.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 22

Talara, Peru (4.6°S, 81.3°W)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	210	10.6						3.5
01	220	9.3						3.6
02	240	8.4						3.4
03	230	7.3						3.2
04	240	5.9						3.0
05	240	5.0						3.1
06	240	4.5						3.9
07	260	7.8			129	2.1		4.2
08	240	10.8	240	---	117	3.0		6.6
09	---	12.1	225	---	113	3.5		5.2
10	---	12.5	215	---	111	3.9		6.2
11	---	12.5	210	---	111	4.1		3.7
12	---	12.6	200	---	111	4.1		2.30
13	(270)	12.6	200	5.2	109	4.1		2.25
14	(280)	12.5	200	5.0	109	4.0		2.25
15	(250)	12.6	200	4.6	109	3.7		5.6
16	---	12.6	210	---	109	3.3		4.4
17	240	12.6	230	---	111	2.9		3.9
18	270	(12.4)			125	2.4		3.9
19	320	(12.4)						3.8
20	380	12.0						3.3
21	300	(12.2)						2.4
22	230	(12.0)						3.3
23	210	(11.0)						3.5

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 24

Huancayo, Peru (12.0°S, 75.3°W)

March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	220	9.3						3.00
01	210	8.9						5.4
02	220	7.4						3.5
03	230	6.2						4.7
04	240	5.5						3.6
05	240	4.8						4.5
06	270	4.9						4.9
07	240	9.2	---	---	119	2.6		5.8
08	---	11.7	225	---	109	3.1		11.0
09	---	12.9	215	---	109	---		11.9
10	---	13.4	210	---	109	---		12.5
11	(280)	12.8	200	5.3	107	---		12.6
12	280	11.9	200	5.3	105	---		12.8
13	270	11.8	200	5.2	105	---		12.5
14	(250)	11.6	200	5.0	105	---		12.5
15	---	11.7	200	---	105	---		12.1
16	(220)	12.0	205	---	109	---		11.8
17	250	11.8	240	---	109	---		9.4
18	280	11.5			120	---		6.4
19	360	10.4						2.20
20	370	9.6						2.25
21	300	9.8						2.50
22	250	9.4						2.75
23	220	9.4						2.95

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 25

Johannesburg, Union of S. Africa (26.2°S, 28.1°E) March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	5.6					1.8	2.9
01	260	5.1					1.8	2.8
02	250	4.6					2.0	2.8
03	<250	4.2						2.8
04	<260	4.2						2.8
05	<250	3.8						2.8
06	260	4.8						2.9
07	240	8.1	240	---	120	2.4		3.2
08	250	9.8	230	4.4	110	3.0		3.2
09	250	11.0	220	4.8	110	3.4	3.9	3.0
10	270	11.6	210	5.1	110	3.6	3.9	2.9
11	270	11.9	210	5.1	110	3.8	4.0	2.8
12	290	12.2	210	5.4	110	3.9		2.8
13	300	12.4	210	5.4	110	4.0		2.8
14	300	12.4	220	5.3	110	3.9		2.7
15	300	12.5	230	5.0	110	3.6		2.8
16	280	12.2	230	4.9	110	3.3	4.2	2.8
17	260	11.9	240	---	110	2.8	3.8	2.9
18	240	11.5			120	2.0	3.1	2.9
19	230	10.7					3.0	3.0
20	230	9.2					2.6	3.0
21	240	8.1					2.2	2.9
22	250	7.2					2.3	2.9
23	250	6.3					2.0	2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 26

Watheroo, W. Australia (30.3°S, 115.9°E) March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	6.1					2.5	2.7
01	280	6.0					2.5	2.7
02	270	5.8					2.6	2.8
03	260	5.0					2.3	2.8
04	260	4.8	---	---			2.5	2.8
05	260	4.7	---	---			2.5	2.8
06	280	4.9	---	---		1.3	2.0	2.9
07	250	7.2	270	---		2.3	2.4	3.2
08	260	8.0	240	4.5		2.9	3.3	3.1
09	270	9.2	220	4.9		3.3	3.9	3.0
10	270	9.5	210	5.0		3.5	3.9	2.9
11	300	10.0	210	5.3		3.7	4.0	2.9
12	310	10.5	220	5.5		3.8	4.1	2.9
13	300	10.9	220	5.5		3.8	4.1	2.9
14	320	11.0	230	5.3		3.7	4.0	2.8
15	310	10.5	230	5.2		3.6	3.9	2.8
16	280	10.1	240	4.8		3.4	3.9	2.9
17	250	9.2	250	4.5		2.9	3.9	3.0
18	250	8.4	---	---		2.1	2.8	3.0
19	240	8.1					2.7	3.0
20	240	7.3					2.4	2.8
21	250	7.1					2.0	2.8
22	260	6.8					1.6	2.8
23	280	6.2					2.0	2.8

Time: 120.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 45 seconds.

Table 27

Capetown, Union of S. Africa (34.2°S, 18.3°E) March 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	4.7					1.7	2.9
01	270	4.4						2.7
02	280	4.2						2.6
03	280	4.0					2.0	2.7
04	270	4.0						2.7
05	250	3.8						2.8
06	270	3.5						2.7
07	250	5.9			140	1.9		3.0
08	250	8.4	240	4.2	120	2.6		3.1
09	250	9.7	230	4.5	110	3.1		3.1
10	260	10.9	220	4.9	110	3.5	3.5	2.9
11	280	11.8	210	5.0	110	3.7	4.0	2.8
12	270	12.1	210	5.1	110	3.8		2.8
13	280	12.3	220	5.2	110	3.8	3.8	2.8
14	280	12.5	230	5.4	110	3.8		2.8
15	280	12.5	230	4.8	110	3.7		2.7
16	270	12.3	240	4.4	110	3.5		2.8
17	260	12.0	240	4.0	110	3.1		2.8
18	250	11.7	250	---	120	2.6	3.0	2.9
19	230	11.1			120	---	2.4	3.0
20	220	9.2					2.0	3.0
21	230	7.7						3.0
22	240	6.7						3.0
23	250	5.4						3.0

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 28

Reykjavik, Iceland (64.1°N, 21.8°W) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00							4.0	
01							3.7	
02	---						4.0	----
03	---						3.6	----
04	---						3.0	----
05	(3.4)						2.8	(3.00)
06	(3.1)						2.9	----
07	(3.1)							(3.10)
08	(4.1)							(3.30)
09	5.2				---	---		(3.40)
10	6.0				---	(2.2)		3.40
11	7.0				---	---		3.35
12	7.7				---	(2.6)		3.30
13	(8.0)				120	(2.6)		(3.30)
14	(8.2)				113	(2.7)		(3.30)
15	(7.6)				120	---		(3.35)
16	(7.9)				---	---		(3.30)
17	(7.6)				---	---		(3.30)
18	(5.8)				---	---		(3.15)
19	(5.2)						4.4	(2.90)
20	---						3.5	----
21	---						3.8	----
22	---						4.0	----
23							3.8	

Time: 15.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 16.2 seconds.

Table 29

Lindau/Harz, Germany (51.6°N, 10.1°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.4					2.0	2.9
01	285	3.5					1.9	2.9
02	290	3.4					2.0	2.9
03	275	3.2					2.3	2.9
04	275	3.0					1.8	2.9
05	270	2.7					1.8	3.0
06	265	2.6						3.0
07	255	3.6			---	E	2.2	3.2
08	225	5.9			120	1.7	2.9	3.6
09	225	7.7			110	2.5	2.8	3.5
10	225	8.6			110	2.8	3.4	3.5
11	230	9.4			110	3.0	3.5	3.4
12	230	9.4			110	3.1	3.5	3.3
13	235	9.2			110	3.1	3.8	3.3
14	230	9.4			110	3.0	3.4	<3.5
15	235	9.2			110	2.8	3.3	3.4
16	230	8.8			115	2.5	2.8	3.5
17	220	8.4			120	2.0	2.6	3.5
18	215	7.1			---	E	2.4	3.4
19	220	6.1					2.4	3.45
20	230	4.5					2.4	3.4
21	260	3.6					1.9	3.1
22	280	3.4						3.0
23	300	3.5						2.9

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 4 minutes.

Table 30

Wakkanai, Japan (45.4°N, 141.7°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	310	4.5						
01	300	4.4						
02	270	4.2						
03	260	4.0						
04	260	3.8						
05	260	3.6						
06	250	3.8						
07	230	6.5						
08	230	8.7						
09	230	9.2						
10	250	10.0						
11	250	10.6						
12	250	10.7						
13	250	10.2						
14	240	9.4						
15	240	9.4						
16	230	8.4						
17	220	7.4						
18	220	6.0						
19	230	5.2						
20	250	4.9						
21	280	4.4						
22	310	4.3						
23	310	4.4						

Time: 135.0°E.
Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 31

Akita, Japan (39.7°N, 140.1°E) February 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	4.4					2.4	
01	330	4.4					2.5	
02	300	4.2					2.5	
03	300	4.0					2.5	
04	280	3.7					2.5	
05	310	3.5					2.1	
06	290	3.7						
07	270	6.6					2.2	
08	250	8.1						
09	260	9.7						
10	270	10.3						
11	280	10.9						
12	290	11.3						
13	280	10.4						
14	270	10.2						
15	260	9.6						
16	250	8.6						
17	250	8.0						
18	250	6.5					2.6	
19	260	5.5					2.1	
20	260	5.0					2.2	
21	300	4.7					2.1	
22	330	4.5					2.0	
23	350	4.5					2.4	

Time: 135.0°E.

Sweep: 0.85 Mc to 22.0 Mc in 2 minutes.

Table 33

Tokyo, Japan (35.7°N, 139.5°E) February 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.5						2.8
01	280	4.6						2.9
02	260	4.0					1.8	3.0
03	240	4.2					2.1	3.1
04	230	3.5						3.0
05	270	3.2						2.8
06	260	3.4						3.0
07	230	7.0						3.4
08	230	8.1	230	---	130	1.9		3.4
09	240	10.1	230	4.3	110	3.2	3.0	3.3
10	250	10.3	230	4.7	110	3.4	3.7	3.2
11	260	10.7	230	4.8	110	3.6	4.0	3.1
12	260	11.2	230	4.8	110	3.6	3.7	3.2
13	250	11.0	230	4.8	110	3.5	3.6	3.15
14	250	10.6	230	4.5	110	3.3		3.2
15	250	10.0	230	4.1	110	3.0		3.1
16	240	9.2	230	---	120	2.7	3.0	3.2
17	230	8.6	---	---	130	---		3.3
18	230	6.9						3.1
19	230	5.6						3.1
20	240	5.2						3.0
21	250	4.9						3.0
22	280	4.8						2.8
23	300	4.7						2.8

Time: 135.0°E.

Sweep: 1.0 Mc to 17.2 Mc in 2 minutes.

Table 35

Nairobi, Kenya (1.3°S, 36.8°E) February 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	200	(13.3)						(3.4)
01	210	9.2						2.8
02	240	9.2						2.9
03	230	9.2						3.0
04	220	8.4						3.1
05	220	6.0						3.2
06	230	4.6					1.9	3.2
07	260	6.7	---	---	130	2.1	2.8	3.1
08	260	9.0	240	4.3	100	3.0	3.7	3.05
09	270	10.0	230	4.9	100	3.5		2.8
10	300	11.3	210	(5.3)	100	4.0		2.6
11	300	12.2	210	5.5	100	4.0		2.6
12	320	12.7	210	5.5	100	---		2.5
13	(340)	13.0	---	---	(100)	---		(2.5)
14	360	13.6	---	5.4	100	---		2.5
15	340	13.9	220	5.5	100	4.0		2.5
16	(330)	13.8	220	5.1	110	3.7		2.55
17	(320)	13.7	240	---	110	3.2		2.5
18	(290)	>12.6	250	---	110	2.6		(2.5)
19	290	>12.0						---
20	350	(12.6)						(2.5)
21	300	---						---
22	260	>13.8						---
23	220	(15.8)						---

Time: 45.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 32

San Francisco, California (37.4°N, 122.2°W) February 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(265)	3.4					(2.8)	2.80
01	(265)	3.6					2.2	2.90
02	260	3.6					(2.6)	3.00
03	250	(3.5)						(2.90)
04	<260	3.4					(2.4)	2.90
05	265	3.3						2.75
06	<280	(3.3)					(2.2)	(2.80)
07	245	(4.9)	---	---	---	---		(3.10)
08	230	7.4	235	---	(115)	(2.5)		3.30
09	235	8.6	225	(3.5)	(111)	(3.0)		3.25
10	245	9.4	215	(4.5)	(111)	(3.1)		3.10
11	255	10.2	210	(4.7)	(111)	(3.3)		3.10
12	270	(11.0)	220	(4.8)	(115)	(3.4)		(3.05)
13	250	10.8	215	(4.8)	(114)	(3.6)		3.10
14	260	10.4	215	(4.4)	(111)	(3.4)		3.00
15	250	10.2	220	(4.2)	(113)	(3.2)	3.6	3.05
16	235	10.0	230	---	(115)	(2.8)		3.10
17	225	9.2	---	---	(117)	(2.1)	2.2	3.20
18	220	8.0					3.2	3.20
19	215	6.2					3.1	3.15
20	<230	4.3					4.4	3.25
21	235	3.5					2.6	3.05
22	250	3.3					(2.3)	2.95
23	265	3.4					(2.9)	2.85

Time: 120.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 34

Yamagawa, Japan (31.2°N, 130.6°E) February 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	4.8						
01	290	4.6						
02	260	4.4					2.3	
03	250	4.4					2.3	
04	240	4.0					2.3	
05	260	3.2					2.2	
06	290	3.2						
07	250	5.0					2.3	
08	230	7.8						
09	240	9.6						
10	250	10.5						
11	250	11.3						
12	250	12.0						
13	270	12.5						
14	260	12.6						
15	250	12.1						
16	240	11.0						
17	240	10.0						
18	220	9.5					2.3	
19	220	7.3					2.3	
20	240	6.5						
21	230	6.4						
22	250	5.4						
23	290	5.0						

Time: 135.0°E.

Sweep: 1.0 Mc to 22.0 Mc in 1 minute.

Table 36

Johannesburg, Union of S. Africa (26.2°S, 28.1°E) February 1956								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	<280	5.2					1.9	2.8
01	260	5.1					2.1	2.9
02	240	4.7						2.9
03	240	4.2						2.9
04	<250	3.8						2.8
05	250	3.7						2.85
06	250	5.0						3.1
07	250	7.1	230	3.9	120	1.9	3.1	3.2
08	270	7.9	220	4.6	110	3.1	3.2	3.0
09	290	9.0	220	5.0	110	3.5	4.0	2.9
10	320	10.1	210	5.1	110	3.7	3.9	2.8
11	330	10.8	210	5.4	110	3.9		2.75
12	320	11.1	210	5.4	110	3.9		2.8
13	330	11.2	210	5.4	110	3.9		2.8
14	320	11.2	210	5.3	110	3.9		2.8
15	310	11.1	220	5.1	110	3.7	4.1	2.8
16	300	11.1	220	4.8	110	3.4	4.0	2.9
17	280	10.7	230	4.2	110	3.0	3.8	2.9
18	250	10.6	250	3.3	110	2.4	3.1	3.0
19	230	9.6			---	---	2.0	3.0
20	230	8.1					2.4	3.0
21	240	7.2					2.1	3.0
22	<250	6.2					2.2	2.9
23	260	5.2					2.2	2.8

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 37

Capetown, Union of S. Africa (34.2°S, 18.3°E) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.5					1.7	2.8
01	<290	4.3					1.7	2.8
02	<280	4.3					1.4	2.8
03	260	4.2						2.8
04	260	4.0						2.8
05	260	3.9						2.8
06	280	4.1						2.85
07	250	5.8	240	---	120	2.2		3.1
08	270	7.4	240	4.1	120	2.8		3.0
09	290	8.6	230	4.7	110	3.2		2.8
10	320	9.2	220	5.0	110	3.5		2.8
11	320	10.2	210	5.1	110	3.7		2.7
12	320	10.5	210	5.3	110	3.8		2.7
13	330	10.6	220	5.2	110	3.9		2.8
14	320	10.8	220	5.2	110	3.8		2.7
15	320	10.9	230	5.2	110	3.8		2.8
16	310	10.5	230	4.9	110	3.6		2.8
17	300	10.2	230	4.6	110	3.3		2.9
18	270	9.9	240	4.0	110	2.8	3.3	2.9
19	250	9.4	240	3.0	120	2.2	3.0	3.0
20	230	8.4					2.5	3.05
21	230	7.0					2.5	3.0
22	240	6.0					2.0	2.9
23	260	5.0						2.9

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 39

Deception I. (63.0°S, 60.7°W) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.8						3.1
01	320	7.5					2.0	3.0
02	330	7.3					3.0	3.0
03	340	7.3					3.0	3.0
04	320	6.9					3.0	3.1
05	340	7.0					3.0	3.1
06	320	7.0					3.1	3.2
07	300	7.4					3.3	3.3
08	300	7.2					3.6	3.4
09	300	7.6					3.5	3.4
10	300	7.6					4.1	3.4
11	300	7.6					4.2	3.4
12	300	7.6					4.2	3.5
13	300	7.6					3.8	3.5
14	300	7.3					3.9	3.4
15	300	7.2					4.0	3.5
16	300	7.3					3.6	3.5
17	300	7.7					3.8	3.5
18	300	7.9					3.6	3.5
19	300	8.3					3.4	3.5
20	300	8.0					3.0	3.5
21	300	8.3					3.0	3.4
22	300	8.2					2.8	3.3
23	300	8.4						3.2

Time: 60.0°W.

Sweep: 1.5 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 41

Point Barrow, Alaska (71.3°N, 156.8°W) December 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	---					5.6	---
01	(280)	---					5.0	---
02	(280)	---					4.6	---
03	(260)	---					4.7	---
04	---	---					4.2	---
05	(320)	---					4.0	---
06	(300)	---					3.7	---
07	<320	(4.1)					4.2	---
08	310	(3.6)					4.5	---
09	300	(3.0)					4.4	---
10	280	(3.7)					3.9	(3.10)
11	240	(4.4)					3.0	(3.20)
12	240	(5.6)					2.9	(3.10)
13	240	6.0					<2.8	3.20
14	230	(6.3)					<2.5	(3.30)
15	230	(5.9)					<2.4	(3.20)
16	240	(4.8)					<2.6	(3.15)
17	240	(4.2)					<2.6	---
18	250	(2.9)					2.8	---
19	260	(2.4)					3.5	---
20	(310)	---					3.3	---
21	310	---					4.2	---
22	(300)	---					4.0	---
23	(280)	---					5.7	---

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 38

Buenos Aires, Argentina (34.5°S, 58.5°W) February 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	9.6						2.1
01	290	9.8						2.9
02	280	8.7						2.8
03	280	8.3						2.75
04	240	7.6						2.75
05	240	6.7						2.7
06	240	7.7						2.8
07	230	9.0	---	---	---	---		3.4
08	240	8.8	220	---	---	---		3.9
09	300	9.8	220	---	---	---		4.2
10	310	10.8	230	---	---	---		4.6
11	330	11.7	220	---	---	---		3.6
12	330	13.3	220	---	---	---		4.0
13	320	13.9	210	---	---	---		3.9
14	300	13.9	220	---	---	---		2.95
15	300	13.2	220	---	---	---		4.2
16	290	13.8	220	---	---	---		4.4
17	270	13.4	(230)	---	---	---		3.8
18	270	(13.8)	---	---	---	---		3.2
19	280	>11.5						3.6
20	280	(10.8)						5.2
21	290	(10.1)						2.9
22	300	10.4						(2.7)
23	300	(10.3)						(2.8)

Time: 60.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 27 seconds.

Table 40

Point Barrow, Alaska (71.3°N, 156.8°W) January 1956

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	---					7.0	---
01	---	---					5.8	---
02	---	---					5.6	---
03	---	---					4.5	---
04	---	---					4.3	---
05	---	---					4.3	---
06	---	---					4.3	---
07	---	---					4.3	---
08	---	---					4.6	---
09	(3.8)						4.4	(2.85)
10	(3.7)						3.7	(2.90)
11	4.7						3.5	3.00
12	(5.3)						2.3	(3.10)
13	(5.9)							3.15
14	6.0							3.10
15	(5.9)							3.05
16	(6.1)							(3.05)
17	(4.8)							(3.00)
18	(3.2)						3.0	(3.00)
19	(3.3)						3.0	(2.85)
20	(3.4)						4.3	(2.90)
21	(3.6)						4.2	---
22	---						4.8	---
23	---						5.0	---

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 42*

Inverness, Scotland (57.4°N, 4.2°W) December 1955

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	(1.9)						---
01	340	(1.9)						(2.5)
02	330	(1.9)						(2.5)
03	315	1.9						(2.6)
04	305	1.9						(2.6)
05	285	2.0						(2.6)
06	275	2.0						---
07	280	(2.0)						---
08	255	(2.9)						---
09	225	5.6					125 1.7	2.7
10	220	6.8					115 2.0	2.8
11	225	7.7					120 2.2	2.8
12	230	8.2	(230)				120 2.3	2.7
13	230	8.0					130 2.2	2.7
14	230	8.1					130 2.1	2.8
15	220	7.4					140 1.8	2.0
16	220	6.6						(3.3)
17	230	5.7						(3.2)
18	235	4.2						3.1
19	255	3.0						(3.0)
20	280	2.3						---
21	290	(2.0)						---
22	340	(1.9)						---
23	340	(1.9)						---

Time: 0.0°.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 43*

Slough, England (51.5°N, 0.6°W) December 1955								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	315	3.1					2.5	2.6
01	310	3.2					2.6	2.6
02	300	3.1					2.6	2.65
03	285	2.9					2.6	2.7
04	275	2.7					2.7	2.8
05	270	2.6					2.5	2.8
06	265	2.4					2.4	2.95
07	270	2.7					2.6	2.8
08	230	4.9			145	1.6	3.2	3.25
09	225	7.2			130	2.0	3.8	3.3
10	225	8.4			125	2.4	4.2	3.3
11	225	8.8	(225)	(3.7)	125	2.6	4.3	3.3
12	230	8.5	(220)	(3.6)	125	2.7	4.3	3.3
13	230	8.6	(225)	(3.7)	130	2.6	4.2	3.25
14	230	8.7			125	2.4	4.0	3.25
15	225	8.2			130	2.0	3.6	3.25
16	220	6.9			150	1.7	3.2	3.25
17	220	5.8					3.1	3.2
18	230	4.7					2.9	3.2
19	245	3.5					2.7	3.1
20	265	2.8					2.4	2.9
21	310	2.6					2.4	2.65
22	325	2.8					2.4	2.6
23	325	2.9					2.5	2.6

Time: 0.0°.

Sweep: 0.55 Mc to 16.5 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 45

Point Barrow, Alaska (71.3°N, 156.8°W) November 1955								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(250)	---					7.0	
01	(260)	---					6.7	----
02	260	---					5.9	----
03	300	---					5.1	----
04	320	---					4.3	----
05	<330	---					4.2	----
06	350 (3.3)						4.3	----
07	(330) (3.8)						4.3	----
08	<320 (3.3)						4.4	(2.90)
09	280 (4.0)						4.1	(3.10)
10	260 (4.5)						3.6	3.00
11	250 (5.2)						3.0	(3.10)
12	250 (5.8)						3.0	3.20
13	240 6.1						<2.6	3.20
14	230 (6.4)						<2.5	3.10
15	230 (6.0)						<2.4	3.10
16	230 (5.5)						2.3	3.20
17	230 (4.1)						<2.1	(3.10)
18	250 (3.2)						<2.8	(3.25)
19	<280 (2.6)						2.8	----
20	<300 (2.6)						3.4	(3.00)
21	(310) ---						4.2	----
22	(290) ---						5.1	----
23	---	---					5.8	----

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 13.5 seconds.

Table 47*

Port Lockroy (64.8°S, 63.5°W) October 1955								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	>6.0					(2.6)	
01	(285)	5.7					(2.6)	
02	290	5.6					(2.6)	
03	(285)	5.4					(2.7)	
04	(280)	5.3					(2.8)	
05	(255)	5.4					(2.6)	
06	(280)	>5.8					---	
07	(250)	>6.0					---	
08	(245)	>6.4			(110)	(2.6)	---	
09	(255)	>6.0			---	---	---	
10	(260)	---			---	---	---	
11	(270)	---			---	(3.1)	---	
12	(260)	>6.3			---	---	---	
13	(255)	>6.7			---	---	---	
14	(240)	>6.4			---	---	---	
15	(250)	(6.5)				(3.0)	(3.3)	
16	(245)	>6.4				(2.8)	(3.2)	
17	(260)	6.2				(2.8)	(3.3)	
18	(250)	>6.5	(245)	(2.9)		(2.1)	---	
19	(265)	---				---	---	
20	(260)	>6.5				---	---	
21	(255)	>6.4				---	---	
22	(265)	---				---	---	
23	(275)	>6.6				---	---	

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 44*

Singapore, British Malaya (1.3°N, 103.8°E) December 1955								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	7.3						2.8
01	270	7.2						2.7
02	265	6.9						2.8
03	250	6.5						3.0
04	240	5.3						3.1
05	235	4.6						3.1
06	240	5.2			130	1.4		2.9
07	245	7.3			120	2.5		3.0
08	235	8.3	230		115	3.1		2.6
09		9.1	220		110	3.4		2.2
10		9.5	210		110	3.7	4.5	2.0
11		10.0	205	(5.1)	110	3.8	4.6	2.0
12		10.2	205		110	3.8	4.2	2.0
13	400	10.6	205	(5.1)	110	3.8	4.3	2.1
14		10.9	205		110	3.6	4.0	2.1
15		10.9	215		110	3.4		2.1
16		10.9	230		110	3.0	3.9	2.2
17	255	10.9	245		125	2.4	3.7	2.2
18	290	10.7				1.8	3.4	2.3
19	340	10.0					3.0	2.2
20	360	9.5					2.9	2.3
21	320	9.8					2.3	2.5
22	260	9.6						2.8
23	235	8.5						2.8

Time: 105.0°E.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 46*

Falkland Is. (51.7°S, 57.8°W) November 1955								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	8.3					1.9	2.6
01	300	7.9						2.6
02	300	7.8						2.6
03	295	7.5						2.6
04	280	7.5	(295)		(130)	1.6		2.6
05	280	8.1	235		125	1.9	2.8	2.6
06	290	8.2	240	(4.2)	115	2.4	3.3	2.6
07	335	8.6	235	(4.6)	110	2.8	4.7	2.7
08	335	8.7	230	4.8	105	3.1	4.9	2.8
09	310	8.6	(225)	5.0	105	3.3	5.4	2.8
10	325	9.0	(215)	5.1	105	3.5	5.4	2.8
11	310	8.8	220	5.1	105	3.6	5.0	2.8
12	320	9.2	225	5.1	100	3.6	4.8	2.9
13	310	8.8	220	5.0	105	3.5	4.8	2.8
14	310	8.6	230	5.0	105	3.5	4.8	2.9
15	305	8.5	235	4.8	105	3.3	4.8	2.9
16	290	8.5	(235)	4.6	110	3.0	5.0	3.0
17	285	8.4	(235)	4.3	110	2.7	4.8	3.0
18	260	8.2	(245)	(3.9)	120	2.3	4.0	3.1
19	260	7.9			(135)	1.8	3.5	2.9
20	275	7.9					3.1	2.8
21	295	8.0					3.8	2.6
22	295	8.2					>3.1	2.6
23	300	8.2					3.6	2.7

Time: 60.0°W.

Sweep: 0.67 Mc to 25.0 Mc in 5 minutes.

*Average values except foF2 and fEs, which are median values.

Table 48

Macquarie I. (54.5°S, 159.0°E) December 1954								
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	4.0					3.8	2.8
01	270	3.3					4.0	3.0
02	270	3.2					3.0	2.9
03	270	3.0	---	---	---	---	2.6	3.1
04	260	3.5	240	2.8	100	1.8	2.3	3.2
05	270	4.0	230	3.5	100	2.2	2.5	3.1
06	350	4.5	230	3.8	100	2.5	2.9	3.0
07	330	4.7	230	4.0	100	2.8	3.1	2.95
08	330	5.2	220	4.2	100	3.0	3.3	3.05
09	350	5.3	220	4.3	100	3.1	3.6	2.95
10	340	5.3	210	4.4	100	3.2	3.4	3.0
11	330	5.5	200	4.4	100	3.2	3.5	3.05
12	330	5.5	210	4.4	100	3.2	3.5	3.0
13	330	5.6	210	4.4	100	3.2	3.4	3.0
14	330	5.5	200	4.3	100	3.2		3.0
15	330	5.6	210	4.2	100	3.1		3.0
16	320	5.6	220	4.0	100	3.0		2.9
17	300	5.6	230	3.9	110	2.7	3.3	3.1
18	270	5.6	230	3.6	110	2.4	4.1	3.1
19	250	5.4	240	3.0	120	2.0	4.2	3.1
20	250	5.2	---	---	130	1.6	3.1	3.0
21	240	5.1					3.2	3.0
22	260	4.8					3.0	2.9
23	260	4.2					4.0	2.9

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 49

Macquarie I. (54.5°S, 159.0°E)							
November 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	283	3.2					3.2
01	290	3.4					3.1
02	270	3.1					2.6
03	270	2.5					1.9
04	250	3.1	---	---	---		3.2
05	260	3.8	240	3.0	110	2.0	3.2
06	320	4.2	240	3.6	100	2.5	3.1
07	350	4.5	220	3.8	100	2.7	3.05
08	340	4.8	220	4.0	100	3.0	3.1
09	360	5.0	200	4.1	100	3.0	3.1
10	330	5.1	200	4.2	100	3.1	3.0
11	320	5.5	200	4.3	100	3.2	3.1
12	320	5.5	200	4.3	100	3.3	3.0
13	320	5.4	200	4.3	100	3.3	3.1
14	340	5.4	200	4.2	100	3.2	3.1
15	330	5.5	210	4.1	100	3.0	3.0
16	310	5.4	220	3.9	100	2.8	3.1
17	290	5.5	220	3.7	100	2.5	3.1
18	260	5.2	240	3.2	100	2.1	2.7
19	250	5.5	240	2.2	120	1.7	3.0
20	250	4.8	---	---			3.0
21	250	3.8					3.0
22	270	4.0					3.4
23	290	3.6					4.3

Time: 157.5°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 51

Tananarive, Madagascar (18.8°S, 47.8°E)							
May 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	220	2.5					3.40
01	240	2.3					3.20
02	250	2.4					3.21
03	230	2.4					1.6
04	230	2.0					1.6
05	255	2.1					1.8
06	255	2.5					2.0
07	(240)	5.0	230	----	123	1.80	3.1
08	245	5.9	225	----	109	2.50	3.3
09	250	6.4	215	4.00	109	2.80	3.5
10	255	6.0	210	4.20	109	3.00	3.63
11	270	5.8	210	4.30	109	3.10	3.54
12	270	5.8	215	4.30	109	3.20	3.52
13	270	5.8	210	4.20	109	3.10	3.52
14	260	5.7	210	4.10	109	3.00	3.4
15	260	5.4	210	3.70	107	2.80	3.5
16	245	5.6	220	----	110	2.50	3.5
17	220	5.0			---	1.90	3.2
18	220	4.3					3.2
19	215	3.4					3.0
20	225	2.8					3.1
21	240	3.2					2.4
22	230	3.3					1.7
23	220	3.0					1.7

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 53

Tananarive, Madagascar (18.8°S, 47.8°E)							
March 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	250	3.6					1.7
01	240	3.4					2.2
02	230	3.0					3.1
03	250	2.6					1.8
04	270	2.4					1.8
05	270	2.3					1.8
06	245	3.2					3.24
07	255	5.2	240	----	119	2.10	3.46
08	280	6.0	235	4.00	115	2.60	3.31
09	290	6.7	225	4.30	113	3.00	3.25
10	305	7.2	220	4.40	113	3.20	3.16
11	310	7.6	220	4.40	115	3.30	3.12
12	310	7.8	220	4.50	115	3.40	3.10
13	300	8.1	225	4.50	115	3.35	3.14
14	290	7.6	225	4.40	115	3.25	3.17
15	290	7.3	230	4.20	113	3.10	3.25
16	275	7.0	230	4.00	115	2.80	3.28
17	255	6.8	240	----	121	2.35	3.2
18	240	6.2			---	----	2.8
19	230	5.3					2.5
20	240	4.7					2.7
21	250	4.3					2.4
22	255	4.0					2.0
23	260	3.9					1.6

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 50

Tananarive, Madagascar (18.8°S, 47.8°E)							
June 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	230	2.5					3.42
01	230	2.3					3.60
02	250	2.2					3.28
03	240	2.1					3.44
04	240	1.8					1.6
05	270	1.9					1.6
06	260	2.0					1.7
07	230	4.0			136	1.90	2.1
08	250	4.7	230	----	113	2.30	2.9
09	270	5.2	230	3.90	111	2.70	3.57
10	270	5.3	220	4.10	111	2.90	3.63
11	285	5.2	215	4.20	110	3.00	3.50
12	300	5.0	210	4.20	111	3.10	3.40
13	300	5.1	210	4.10	113	3.05	3.4
14	275	5.2	220	4.00	111	2.95	3.53
15	270	4.9	220	3.90	113	2.75	3.3
16	250	4.6	220	----	111	2.40	3.4
17	230	4.6			---	1.80	3.6
18	215	4.0					3.2
19	210	3.1					3.2
20	230	2.5					2.0
21	240	3.0					2.0
22	240	2.8					1.8
23	235	2.9					3.40

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 52

Tananarive, Madagascar (18.8°S, 47.8°E)							
April 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	250	3.0					1.6
01	230	2.9					1.7
02	240	2.8					2.0
03	230	2.6					1.8
04	250	2.2					1.9
05	260	2.1					1.8
06	250	2.8					1.8
07	250	5.3	235	----	121	2.10	2.4
08	260	6.3	230	----	111	2.50	3.42
09	275	7.2	225	4.10	111	2.90	3.5
10	270	8.0	220	4.30	111	3.10	3.36
11	260	8.0	215	4.40	111	3.20	3.46
12	270	6.6	210	4.40	111	3.30	3.44
13	290	6.1	220	4.40	111	3.20	3.31
14	280	7.0	215	4.30	111	3.10	3.36
15	260	7.0	230	4.10	111	2.90	3.1
16	250	6.1	220	----	115	2.60	3.0
17	250	5.6	230	----	121	2.10	3.7
18	225	4.9					3.1
19	225	4.2					2.1
20	230	3.4					3.0
21	250	3.2					1.6
22	250	3.4					2.0
23	235	3.3					1.7

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 54

Tananarive, Madagascar (18.8°S, 47.8°E)							
February 1954							
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs (M3000)F2
00	260	4.0					3.15
01	240	3.9					1.6
02	240	3.3					1.8
03	250	2.8					1.8
04	260	2.6					1.9
05	250	2.5					1.8
06	245	3.4					2.4
07	265	4.7	240	----	121	2.20	3.0
08	305	5.4	230	4.00	115	2.70	3.19
09	340	5.7	230	4.20	115	2.95	3.08
10	340	6.2	220	4.30	115	3.20	3.5
11	340	7.2	220	4.40	115	3.35	2.95
12	335	7.5	220	4.40	115	3.40	1.8
13	325	7.6	225	4.40	115	3.35	3.8
14	315	7.7	225	4.30	115	3.30	3.04
15	305	7.4	220	4.20	114	3.10	3.12
16	290	6.8	230	4.00	117	2.85	3.16
17	290	6.6	240	3.80	121	2.45	3.17
18	265	6.6	240	----	---	1.80	3.5
19	240	6.2					3.0
20	235	5.6					3.0
21	250	5.0					2.4
22	255	4.5					3.07
23	265	4.1					2.0

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 55

Tananarive, Madagascar (18.8°S, 47.8°E)								January 1954
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	255	4.2					2.8	3.19
01	240	3.7					2.9	3.24
02	250	3.0					2.8	3.13
03	255	2.9					2.1	3.23
04	250	2.8					3.0	3.13
05	270	2.6					2.5	3.11
06	---	3.8	240	---	132	1.85	3.0	3.31
07	290	5.0	230	---	121	2.50	3.6	3.26
08	335	5.4	220	4.10	115	2.85	3.8	3.08
09	350	6.0	220	4.30	115	3.20	3.6	2.95
10	340	6.8	210	4.40	115	3.50	4.2	2.94
11	345	7.2	215	4.50	115	3.50	3.8	2.92
12	350	7.7	---	4.60	116	3.55	3.9	2.86
13	350	7.6	---	4.50	115	3.50	3.5	2.84
14	335	8.4	220	4.40	115	3.40	3.7	2.94
15	305	9.3	220	4.30	115	3.20	4.0	3.03
16	285	8.6	220	4.10	115	3.00	3.5	3.17
17	270	7.4	230	3.80	119	2.60	3.5	3.26
18	255	5.7	240	---	---	2.00	3.4	3.26
19	235	5.3					2.4	3.17
20	240	5.2					2.5	3.10
21	250	5.0					2.4	3.15
22	270	4.4					3.0	3.05
23	260	4.2					2.5	3.08

Time: Local.

Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 57*

Campbell I. (52.5°S, 169.2°E)								April 1951
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	---	---						---
06								
07	240	5.0	---	---	---	2.2		(3.2)
08	(240)	5.9	240	---	120	2.4		3.2
09	(320)	6.8	240	---	130	2.8		3.2
10	270	7.5	220	4.1	120	3.0		3.2
11	270	7.1	230	4.2	110	3.1		3.25
12	270	7.2	220	4.1	120	3.0		3.1
13	260	7.6	220	4.4	120	3.0		3.1
14	260	7.8	230	4.0	120	2.8		3.15
15	250	7.9	230	---	---	2.5		3.15
16	260	7.5	---	---	---	2.2		3.15
17	(220)	(7.6)						(3.25)
18	250	(7.2)						(3.1)
19	240	(6.0)						(3.0)
20								
21	(310)	(5.0)						---
22								---
23	(350)	E						---

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 59*

Campbell I. (52.5°S, 169.2°E)								May 1950
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	280	---						---
06								
07	270	4.3			120	2.1		2.8
08	250	6.2			120	2.1		3.1
09	250	7.6	240	3.7	110	2.3		3.1
10	250	8.3	240	4.0	120	2.6		3.05
11	250	9.0	240	4.0	110	2.6		3.0
12	250	9.4	240	4.0	110	2.7		3.0
13	250	9.8	240	3.6	110	2.6		3.0
14	250	9.7	240	3.8	110	2.5		3.0
15	240	9.6	250	4.0	110	2.1		3.0
16	240	9.1	240	4.0	120	2.0		3.05
17	240	8.0			110	---		3.2
18	250	6.8						3.2
19	250	5.5						3.1
20								
21	280	---						---
22								---
23	300	---					2.2	---

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 56*

Campbell I. (52.5°S, 169.2°E)								May 1951
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	290	2.8						2.85
06								
07	240	4.4	---	---	---	1.9	1.9	3.15
08	230	4.8	---	---	130	2.0	2.0	3.3
09	220	5.6	---	---	120	2.4		3.3
10	240	6.6	220	3.8	120	2.6		3.3
11	240	7.0	220	3.8	120	2.7		3.3
12	240	7.5	230	4.1	120	2.8		3.3
13	240	7.3	230	4.0	120	2.7		3.3
14	240	7.8	230	3.8	120	2.6		3.3
15	230	7.5	230	---	120	2.2		3.3
16	230	6.9	---	---	---	1.6		3.25
17	220	6.2				E		3.2
18	230	5.4						3.1
19	240	4.5						2.9
20								
21	260	4.4						2.9
22								
23	290	4.2					2.1	2.7

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 58*

Campbell I. (52.5°S, 169.2°E)								March 1951
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	300	---						---
06								
07	250	4.8	250	---	120	2.4		3.1
08	300	5.3	240	4.1	120	2.8		3.1
09	310	5.7	230	4.4	120	3.0		3.05
10	320	6.2	220	4.5	120	3.2		3.1
11	330	6.2	220	4.5	110	3.3		3.0
12	320	6.4	220	4.5	110	3.4		3.0
13	320	6.5	230	4.6	110	3.4		3.05
14	320	6.3	240	4.4	110	3.2		3.0
15	300	6.5	240	4.2	120	3.0		3.0
16	290	6.6	240	---	120	2.7		3.0
17	260	6.8	250	---	120	2.3		3.0
18	260	7.2			---	2.0		3.0
19	260	7.1			---	---		2.95
20								
21	300	(5.7)						---
22								---
23	350	E					2.8	---

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

Table 60*

Campbell I. (52.5°S, 169.2°E)								April 1950
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05	270	---						---
06								
07	250	6.4			120	2.0		3.0
08	240	7.3	---	---	120	2.4		3.1
09	240	8.0	230	4.3	110	2.7		3.0
10	250	9.1	220	4.3	110	2.9		2.95
11	250	9.6	230	4.4	110	3.0		2.9
12	250	9.7	230	4.5	110	3.1		2.9
13	250	10.0	240	4.3	110	3.0		2.9
14	250	10.1	240	4.1	110	2.8		2.9
15	250	10.0	250	4.1	110	2.6		2.9
16	250	10.0	---	---	120	2.2		2.9
17	250	9.8			140	1.9		2.9
18	250	8.2						2.9
19	260	7.5						2.8
20								
21	260	6.8						---
22								---
23	280	---					3.5	---

Time: 165.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 5 minutes, manual operation.

*Observations taken on a 16-hour working schedule.

TABLE 61
IONOSPHERIC DATA

foF2, O.1Mc, June 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	71	64	53	50	48	43	42	50	50	55	55	62	61	62	62	61	61	66	65	66	66	68	64	58
02	55	52	53	51	48	49	50	55	60	64	70	71	74	72	72	72	74	72	77	78	82	74	72	70
03	69	62	58	51	48	47	59	69	67	73	74	71	67	69	71	69	72	72	76	78	72	66	62	62
04	58	55	50	44	40	44	58	60			68	66	68	72	72	73	76	76	78	83	75	74	70	68
05	67	62	56	51	51	48	53	62	64	58	58	60	58	62	72	67	72	70	70	70	71	67	64	62
06	58	58	57	57	54	53	61	67	56	62	64	63	60	67	64	64	68	70	69	70	74	74	70	60
07	56	57	51	49	45	47	60	60	59	56	62	60	62	64	66	67	70	71	72	70	73	70	68	66
08	66	60	58	52	43	44	48	54	56	59	66	70	66	70	70	70	70	74	76	74	78	76	69	65
09	62	58	48	39	38	39	50	54	56	56	57	63	58	63	65	65	68	68	64	68	70	72	68	65
10	62	62	45	42	38	42	54	61	56	62	62	57	58	59	69	66	68	68	72	74	70	71	70	68
11	63	62	51	45	42	41	50	55	54	55	57	58	64	64	63	64	65	68	68	70	75	74	68	68
12	62	59	54	49	47	48	53	57	57	68	69	70	75	72	78	78	80	80	85	88	88	73	78	70
13	68	62	54	52	44	45	53	53	58	60	59	60	64	60	59	64	71	76	80	86	74	71	68	64
14	60	56	50	48	42	40	45	50	62	66	64	70	67	67	67	72	72	79	81	79	78	74	73	69
15	67	65	63	47	44	47	54	54	55	58	62	66	62	64	66	69	69	70	75	79	88	80	80	78
16	72	66	58	53	45	44	50	57	65	63	65	74	63	68	70	76	76	75	77	76	74	72	72	68
17	64	64	60	56	44	45	54	63	63	62	59	60	63	64	67	71	70	76	79	79	77	70	71	67
18	67	59	54	52	49	48	59	60	60	62	63	60	64	63	64	65	66	68				72	70	68
19	68	63	54	50	45	49	57	60	62	63	64	64	67	68	70	68	68	70	69	68	73	68	64	63
20	62	58	57	53	53	54	63	69	67	65	69	67	70	70	72	70	71	75	79	84	84	75	76	72
21	70	70	60	55	52	50	58	60	64	70	75	72	71	72	76	78	78	78	80	80	74	74	70	72
22	70	72	60	52	45	44	50	56	58	61	60	60	60	66	66	65	66	69	70	66	69	68	67	62
23	58	55	52	49	44	48	51	55	60	65	66	64	64	64	70	73	85	90	102	82	78	77	58	60
24	59	51	47	46	39	39	45	48	53	54	50	53	58	55	56	55	55	60	69	67	78	78	69	60
25	42	37	23	28	26	30	35	38	42	44	47	48	49	49			53	50	55	54	53	60	57	55
26	51	46	35	35	38	45	41	43	48	48	48	55	55	58	57	59	62	68	63	64	68	63	58	
27	56	49	48	40	40	38	42	46	49	50	46	47	52	53	56	51		56	53	56	60	57	54	
28	50	50	47	42	39	37	51	58	54	53	57	57	49	56	58	57	58	58	60	62	60	66	63	58
29	58	52	51	42	38	40	40	45	52	52	53	56	55	56	59	68	63	67	66	70	64	68	64	
30	59	54	51	49	44	43	48	57	56	64	67	59	56	57	58	56	61	63	66	69	60	58	61	60
MED	62	58	53	49	44	44	51	56	57	61	62	61	62	64	66	66	69	70	72	70	74	72	68	64
NO	30	30	30	30	30	30	30	30	29	29	30	30	30	30	29	30	29	29	29	29	29	30	30	30

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 62
IONOSPHERIC DATA

foF2, O.1Mc, June 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2300
01	68	56	50	48	44	43	46	47	50	55	57	61	63	60	61	63	64	66	66	67	67	69	64	57
02	55	54	51	48	49	49	54	59	67	64	70	72	82	70	82	72	72	75	76	80	78	71	70	68
03	68	61	55	50	44	54	67	66	70	73	70	68	69	70	70	71	72	76	76	77	69	64	60	58
04	58	53	50	43	40	52	62		A	68	69	68	70	72	73	76	76	76	80	80	73	72	67	68
05	64	58	55	52	50	48	61	60	61	57	61	59	59	65	70	70	70	69	74	72	70	68	60	62
06	59	57	57	54	51	57	66	64	58	63	63	64	64	65	65	67	70	70	69	70	74	70	62	57
07	54	55	50	47	43	54	65	60	58	57	59	60	63	63	56	69	70	72	72	73	70	71	68	66
08	63	56	56	47	42	44	50	54	58	60	68	66	68	70	70	70	72	74	74	76	80	73	68	66
09	60	52	43	36	37	45	52	57	57	56	58	57	62	67	64	66	70	64	65	69	72	70	68	59
10	60	54	41	40	37	49	61	59	59	65	62	58	60	60	66	67	70	72	72	72	69	70	69	64
11	62	58	48	45	38	45	53	56	56	56	57	60	61	64	64	65	64	70	68	71	76	72	70	62
12	59	54	49	49	47	49	53	56	63	66	73	72	76	74	76	78	80	84	88	88	82	74	75	70
13	61	60	54	47	42	50	54	55	58	58	60	60	61	62	62	68	70	76	86	80	71	70	64	62
14	58	53	50	45	41	42	49	55	63	65	70	70	66	66	67	70	79	78	82	75	74	72	70	69
15	64	66	56	50	41	48	52	55	56	63	62	63	66	63	66	66	71	72	75	82	80	84	78	77
16	67	65	56	49	44	47	55	61	63	67	68	69	68	71	72	78	75	78	76	76	74	72	72	66
17	62	59	56	47	43	50	58	63	62	63	60	62	64	64	68	70	70	76	78	77	72	68	69	67
18	62	60	52	50	47	53	61	60	62	63	60	61	64	64	64	65	66	72	76	68	73	72	68	70
19	67	55	52	44	43	55	60	60	63	61	66	67	69	67	68	65	69	69	68	69	72	68	66	62
20	58	57	56	53	50	59	68	67	65	65	66	69	70	70	68	70	72	76	80	85	82	71	76	70
21	70	66	56	54	49	54	58	64	68	72	75	72	70	74	76	78	74	76	80	78	74	69	70	72
22	71	60	54	48	43	48	54	57	58	60	61	58	62	66	65	66	68	68	68	66	68	70	63	61
23	55	54	50	48	45	49	53	58	63	69	66	64	61	67	68	84	85	93	99	79	74	73	62	60
24	59	49	45	43	37	42	47	50	55	51	52	55	55	57	56	54	55	66	69	67	78	70	68	54
25	40	25	23	21	29	36	42	41	44	46	47	48	49	52	50	53	50	52	53	53	54	53	56	54
26	44	38	36	31	36	37	43	46	44	46	53	48	55	57	57	60	61	64	66	62	68	68	61	53
27	50	50	45	39	38	39	43	50	48	52	50	48	53	55	55	A	A	58	54	56	60	58	54	54
28	51	48	45	38	35	44	55	55	56	53	58	52	49	57	56	58	59	60	62	61	66	64	60	58
29	55	52	47	40	35	45	39	41	49	54	53	58	56	56	58	65	61	A	A	65	70	66	62	62
30	59	52	52	47	45	44	53	55	57	62	64	58	57	56	58	94	63	62	68	68	63	52	60	58
MED	60	55	50	47	43	48	54	57	58	62	62	61	63	64	66	68	70	72	74	72	72	70	68	62
NO	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	29	29	29	29	30	30	30	30	30

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 63
IONOSPHERIC DATA

foF1, O.1Mc, June 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01						L	390	410	440	470	480	490	500	500	500	480	490	470	U L					
02						Q	L	450	480	490	530	500	520	520	500	500	470	L	L					
03							A	430	480	500	510	520	520	540	550	520	500	440	H	A				
04						L	L	A	A	A	A	A	A		500	520	510	500	490	L	Q			
05						L	L	430	480	480	520	500	540	540	530	510	490	440	A	A				
06							L	430	470	480	490	500	520	520	520	520	480		A	A				
07						L	360	410	470	500	500	500	520			510	470	460		L				
08							390	430	460	500	490	540	520	540	500	500	490	460	L	Q				
09						290	U L	380	440	460	480	500	520	510	510	500	500	490	U L		L			
10						Q	400	440	500	500	490	510	I A	H	H	H	490	480	U L		L			
11						L	370	440	470	470	490	490	500	500	490	500	480	440	U L	Q				
12							L	430	490	490	510	560	550	520	530	530	470	490	L	L				
13						Q	U L	F	F	F	F	F	H	H	H	H	H	H	L	L				
14						Q	F	F	F	F	F	F	H	H	H	H	H	H	L	L				
15						L	L	H	470	490	500	520	530	540	530	520	500	480	460	L				
16							L	H	H	H	H	H	H	H	H	H	500	430	L	L				
17							U L	I A	420	430	480	500	500	520	520	510	530	520	500	470				
18						L	400	440	490	490	490	520	520	520	520	520	500		A	A				
19							L	L	490	500	500	520	550	530	530	530	490	480		L				
20						Q	L	A	A	520	530	540	530	560	540	530	520	480	340	L				
21							L	U L	470	500	520	530	550	520	550	540	560	510	490	L	L			
22							L	U H	420	480	490	500	500	500	520	500	480	470	410	A				
23						L	420	450	470	480	510	530	510	510	500	480	500	450	400	Q				
24							A	450	460	470	480	490	480	500	500	490	450	430	L	L				
25							F	F	F	F	F	F	H	H	F	I A			L					
26							350	380	420	440	470	480	490	490	480	470	450	440	410					
27						280	Q	390	410	430	450	460	480	480	490	490	480	460	430	A	L			
28							Q	360	400	430	450	460	470	480	480	470	480		400	L	L			
29								380	430	460	480	490	490	500	480	470	470	500	A					
30								320	370	430	430	450	470	470	490	500	480	480	470		L			
								L	420	440	490	490	480	490	490	480	450	450	380					
MED								380	430	470	490	500	500	520	510	500	500	490	460	410				
NO						3	16	27	28	29	29	29	29	29	29	30	29	26	11					

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 64
IONOSPHERIC DATA

foE, 0.1 Mc, June 1956

75°W Meon Time

Station Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
							A	A	U A	U A	A	A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A
01						S	300	310	350	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A	I A
02							230	280	320	350	360	370	370	370	360	350	330	300	270					
03							A	A	A	U A	310	330	A	A	380	380	360	330	300	250				
04						S	250	300	320	310	350	360	370	390	380	360	340	310	260	A				
05						S	250	300	320	350	350	370	I A	380	390	380	360	350	310	260	U A			
06							230	280	310	340	A	A	A	390	380	370	340	300	250					
07						S	250	290	310	330	350	360	A	A	B	A	350	320	260	U A				
08							240	290	300	A	A	A	380	390	380	370	340	300	250	190				
09						S	220	290	310	330	350	350	350	360	380	370	340	300	250	170				
10						U S	150	240	280	320	340	350	360	A	A	A	U A	330	310	260	190			
11							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
12							170		330	350	A	A	A	A	A	A	330	300	260	180				
13						S	A	U A	290	330	350	A	A	380	380	370	350	340	300	250	180			
14						S	230	290	310	330	350	350	350	360	380	370	340	300	250	170				
15							230	290	310	330	350	350	350	360	380	370	340	300	250	170				
16							170	240	280	320	340	350	360	A	A	A	U A	330	310	260	190			
17							A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
18						S	230	290	310	330	350	350	350	360	380	370	340	300	250	180				
19							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
20							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
21							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
22							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
23							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
24							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
25							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
26							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
27							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
28							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
29							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
30							230	290	310	330	350	350	350	360	380	370	340	300	250	180				
MED							240	290	320	340	350	360	380	380	380	360	340	310	260	180				
NO						4	21	19	21	25	23	18	15	16	18	21	26	28	27	11				

TABLE 65
IONOSPHERIC DATA

fEs, 0.1 Mc, June 1956

75°W Mean Time

Station Washington, D.C. Lot. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01	S	S	S	S	S	G	24	29	70	43	46	46	H 50	56	45	70	74	33	37	37	S	S	33	72
02	S	28	S	S	25	27	33	72	49	80	110	46	50	39 H	49	50	74	44	52	40	S	31	S	S
03	S	26	39	56	80	60	55	35	47	44	78	94	66	120	72	38	63	35	60	58	70	37	42	46
04	S	32	26	48	50	41	38	68	90	120	72	125	74	56	39	110	74	38	36	94	55	43	24	23
05	26	S	22	28	40	17	35	35	H 72	50	80	H 74	64	68	58	158	70	G 66	66	98	60	29	S	32
06	33	24	22	23	S	19	37	86	115	56	70	H 76	45	49	106	84	G 53	54	58	103	78	31	29	46
07	39	37	22	28	28	31	35	43	96	49	70	50	48	68	49	47	G 39	39	39	41	76	47	120	70
08	S	S	48	70	27	Y 29	37	80	70	Y 64	54	45	100	47	Y 54	41	Y 52	64	27	23	S	E	S	24
09	S	21	24	32	S	64	33	84	82	46	53	50	40	68	H 70	H 53	41	40	27	34	S	24	S	S
10	S	E	E	S	E	70	30	70	34	72	102	54	80	54	50	48	G 50	G	G	20	S	S	S	35
11	S	E	E	E	E	74	31	50	43	88	84	54	72	54	48	43	G 44	G	33	34	31	S	S	S
12	S	S	29	S	28	38	72	68	65	62	72	50	72	40	G	G	G	G	29	21	S	S	23	S
13	37	39	35	S	80	42	33	62	94	76	68	50	42	42	41	G	70	33	33	34	13	S	S	S
14	S	S	S	S	S	18	42	120	78	188	98	47	76	42	40	41	37	32	40	31	43	35	S	19
15	42	S	S	S	G	74	98	48	44	80	42	52	39	57	43	90	57	44	21	30	S	S	29	
16	28	49	50	70	90	40	38	45	42	45	47	43	53	74	46 G	50	H 54	G	44	37	37	14	S	30
17	27	33	37	14	39	44	72	59	63	64	55	70	72	90	54 H	54	43	42	21	S	S	S	S	
18	S	31	60	35	S	41	41	57	110	105	50	47	39	76	G 110	43	62	63	115	76	90	80	50	31
19	35	98	64	48	F 45	48	80	108	80	92	120	53	64	53	G 100	8	36	49	39	20	40	31	60	66
20	29	41	40	39	35	34	44	58	66	75	48	49	45	40	47	G 8	G	G	G	31	31	34	21	S
21	S	S	E	S	E	18	40	72	H 46	46	52	51	54	72	47	105	49	38	31	47	37	29	S	S
22	S	S	S	E	S	18	35	56	60	114	72	46	42	66	48	48	G 35	G	30	39	44	43	80	21
23	S	S	31	S	S	17	48	39	47	49	47	46	50	50	47	45	G	G	G	20	S	S	28	S
24	S	S	F 38	37	39	36	37	38	8	40	40	47	49	G	39	41	45	33	28	S	S	S	S	S
25	S	S	S	S	S	19	46	G 70	45	68	45	52	80	60	39	46	34	30	29	H 68	76	64	39	
26	36	47	-36	37	S	17	40	35	67	39	58	47	60	42	64	37	G 46	G	43	22	S	S	S	S
27	S	S	S	S	S	17	68	34	41	49	46	71	47	62	69	50	180 G	120 G	158	34	27	S	48	.80
28	52	46	35	44	18	28	44	110	42	40	38	38	39	50	47	36	G	G	43	52	50	39	55	S
29	29	S	S	54	140	17	44	49	H 42	47	35	35	36	47	H 78	40	64	70	66	76	45	80	56	40
30	74	33	S	38	H 42	40	46	70	45	45	74	72	78	88	70	74	56	45	42	34	34	80	90	42
MED	35	33	35	37	39	30	40	58	64	50	68	50	52	54	48	46	50	36	38	34	44	36	49	37
NO	13	17	21	19	20	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	20	18	16	18

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 66
IONOSPHERIC DATA

f min, 0.1 Mc, June 1956

75° W Mean Time

Station: Washington, D.C Lat. 38.7°N Long. 77.1° W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒[illegible]

TABLE 67
IONOSPHERIC DATA

h'F2, Km, June 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	260	260	290	290	280	L	520	450	580	490	530	450	470	450	430	430	400	340	320	260	250	270	260	240	
02	280	300	280	270	250	H	270	360	430	400	420	390	370	380	370	350	330	310	280	270	250	250	270	280	
03	260	250	250	300	270	U A	250	300	310	330	340	310	340	370	450	400	380	340	330	290	U A	220	260	270	280
04	270	280	270	250	340	290	280	A	A	A	390	A	A	400	260	360	330	320	290	320	270	250	250	270	
05	270	270	280	260	280	270	L	370	330	390	490	460	490	500	390	410	370	330	330	I A	300	270	260	250	280
06	280	290	300	270	250	250	280	290	470	410	410	420	480	420	450	L	370	340	290	280	260	260	250	290	
07	290	270	250	280	270	390	320	310	450	460	400	480	500	460	430	400	370	350	L	270	U A	U A	260	280	
08	250	270	320	310	310	300	430	470	310	430	390	400	420	410	370	420	400	340	300	250	270	230	240	260	
09	260	280	300	320	310	420	U L	320	370	400	460	510	500	520	440	420	400	380	310	340	250	250	250	250	
10	260	240	230	280	280	270	F	320	300	450	440	390	530	520	540	380	460	380	370	340	270	230	260	280	280
11	250	250	250	260	280	L	360	380	500	490	560	530	430	450	420	430	400	370	320	260	260	250	260	260	
12	260	280	270	270	260	270	L	400	390	360	350	350	370	360	360	360	330	330	L	270	240	220	260	250	
13	270	280	250	270	250	250	290	L	430	350	460	460	440	510	530	440	380	370	320	250	230	270	280	300	
14	280	280	280	290	260	240	L	F	500	390	380	420	410	360	470	500	420	430	320	310	260	240	260	290	280
15	280	300	260	270	310	L	L	430	470	490	460	450	530	440	450	430	410	380	320	290	250	240	250	260	
16	250	290	A	A	280	270	270	450	350	L	370	370	360	430	460	380	340	320	290	270	240	260	270	270	
17	270	270	260	220	260	280	U L	340	350	380	440	520	530	460	480	460	390	400	360	300	270	230	250	270	250
18	270	290	280	280	270	L	310	300	U A	I A	410	610	460	480	480	430	430	390	A	A	A	U A	330	300	280
19	260	300	A	280	290	270	L	L	360	400	430	470	470	470	430	450	410	370	320	290	260	240	260	270	
20	270	290	280	290	280	270	300	310	295	390	400	470	410	450	410	410	420	360	320	280	250	230	270	260	
21	270	280	280	280	270	270	330	400	390	360	340	340	360	420	380	400	340	330	280	300	240	230	280	290	
22	270	260	260	250	240	250	L	H	350	430	430	550	560	540	440	430	440	420	370	320	260	270	280	260	
23	290	290	270	280	290	290	370	410	420	410	420	500	450	480	400	430	350	340	300	210	250	250	270	290	
24	300	290	300	280	260	270	310	540	480	480	G	630	490	620	500	550	500	450	330	280	290	270	290	280	
25	350	360	400	420	380	300	G	G	G	G	G	G	G	G	A	G	490	450	390	L	260	310	320	280	
26	260	280	310	320	310	390	420	G	G	520	550	G	550	530	410	520	410	370	310	L	270	260	260	270	
27	310	310	250	300	300	300	520	600	520	530	G	G	560	530	450	530	A	A	U L	290	260	270	270	280	
28	300	280	270	270	280	250	380	360	480	530	F	440	470	480	440	470	430	410	L	280	250	280	310	260	
29	270	270	270	270	310	450	550	510	640	510	490	510	500	560	540	490	350	430	360	U A	260	300	280	280	
30	270	300	270	270	270	260	L	380	470	410	390	410	A	A	420	500	410	380	350	290	250	260	290	280	
MED	270	280	270	280	280	270	320	380	430	430	420	470	470	460	430	430	400	360	320	280	250	260	270	280	
NO	30	30	28	29	30	26	23	27	29	28	30	29	28	29	29	29	29	29	26	26	29	30	30	30	

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 68
IONOSPHERIC DATA

h'F1, Km, June 1956

75° W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01						290 Q	230	220	225	205	210	235	205	200	200	200	220	240	240 A						
02							230 A	200	215	220	205	200	200	210	230	230	230	225	A						
03								220 A	210	200	190	200	210	220	225	225	230	240							
04						L	240		A	A	A	A	A	U A 215	220	215	A	215	240	Q					
05							250	230	230	205	210	220	205	200	A	A	A	230	225	A	A				
06							230	230	210	210	210	200	210	205 A	205 B	220		A	A						
07							260	240	225	210 U A	200	200	230	205		220	210	220	230	Q					
08							240	250	220	200	200	220	210	200	220	240	240	220	250						
09							325 Q	240	230	215	205	210	215	210	210	215	220	220	225	230	260				
10								245	220	215	200	215	220	210	200	230	240	230	230	230	240				
11							300	210	230	205	190	200	185	190	190	200	205	205	215	240	Q				
12								230	225	230	210	205	190	185	210	190	225	220	210	240	260				
13							Q	215	215	200	210	200	205	180	190	210	230	210	235	250	255				
14							Q	215	210	225	210	185	200	180	180	175	230	235	230	250	255				
15							250	200	200	200	210	215	210	205	185	230	230	220	235	250	260				
16							190	215 I A	190 H	225 H	190 H	200 H	215 H	190 H	210 H	190 H	225 H	230	230	250					
17							200	205 A	210 A	200 A	200 H	210 H	220 H	230 I A	210 H	215 H	200 A	220 A	225 A	240 A					
18							265	250 A	250 A	205 U A	210 A	200 H	220 H	210 H	200 H	200 H	210 H	200 H	210 H	235 H	260 H				
19								Q	A	A	A	200 H	220 H	210 H	200 H	210 H	200 H	210 H	235 H	260 H					
20							265				210 U A	200 U A	210 U A	200 U A	215 U A	215 U A	215 U A	240 H	230 H	270 H	A				
21								240	220	220	200	220	190	220	250	200	210	210	230	240					
22								230	210	230 U A	210 H	220 H	230 H	210 H	205 H	180 H	200 H	215 H	230 H	230 H	A				
23							280	230	220	210 H	210 H	220 H	205 H	190 H	180 H	240 H	210 H	240 H	240 H	240 H	Q				
24								A	250 I B	230 H	210 H	200 H	190 H	220	235	205	210	210	280	260	260				
25								F	250	215	230	200	200	205	210	210	215	220	230	235	260				
26							300	230	220	200	200	190	210	205	210	220	230	240	225	240	250				
27							Q	250	240	220	205	200	180	220	210	220	230	A	A	230	260				
28							Q	250	220	220	205	205	200	200	220	200	210	230	230	A	A				
29							U A	280	230	220	210	250	200	185	215	210	I A	240	A	A					
30								260	235	210	210	215	210			180	220	250	230	245	260				
MED							280	230	220	210	210	200	205	210	205	210	220	220	230	240	260				
NO							10	27	26	27	27	29	29	28	27	28	29	25	26	23	15				

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

TABLE 69
IONOSPHERIC DATA

h'E, Km, June 1956

75°W Mean Time

Station: Washington, D.C. Lat 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec.

Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
01							111	103	105	107	109	109	105	109	109	103	101	109	109					
02						111	109	105	101	101	101	101	101	101	101	101	105	109	109					
03							109	105	101	101	101	101	101	101	101	107	105	109	109					
04						S	109	107	101	101	101	101	101	101	101	101	101	103	109	U S				
05						S	109	107	101	101	101	101	101	101	101	101	105	109	109	U A				
06							111	101	101	101	101	101	101	101	101	101	105	109	111					
07						S	109	105	101	101	101	101	101	103		109	109	109	111					
08							105	105	109	101	109	101	101	101	101	105	101	105	109	119				
09						S	111	105	103	101	101	101	103	101	101	101	105	109	109	109				
10						131	111	103	101	101	101	101	101	101	101	103	105	109	109	129				
11						U S																		
12							A	U A					H							U S				
13						S	H	109	105	101	101	101	101	101	101	101	105	109	109	119				
14						S	105	109	103	101	101	101	101	101	101	109	105	109	109	119				
15						111	111	101	101	101	101	101	101	101	101	101	101	107	110					
16							111	109	107	103	103	101	107	103	101	103	101	101	111					
17							111	109	105	101	101	101	101	101	101	101	105	109	109					
18						S	113	105	101	101	101	101	101	101	101	103	109	109	111					
19							109	109	109	101	101	101	101	103	103	107	105	109	111					
20						A	111	109	101	105	105	101	103	109	109	109	109	109	119					
21							111	109	101	101	101	101	101	105	105	107	103	105	111					
22							105	103	103	103	101	113	111	109	105	109	109	109	115	123				
23						S	109	109	103	103	105	103	103	101	101	101	109	109	109	119				
24							111	105	107	109	109	101	103	101	103	105	109	111	111	125				
25							111	105	101	103	101	101	107	101	101	109	109	109	119	121				
26						S	111	105	103	101	105	101	105	107	107	109	109	111	117	129				
27						S	111	109	101	105	103	101	101	101	101	103	109	109	111					
28						U S	129	111	109	107	105	103	103	101	101	101	105	109	111	115	125			
29						S	109	105	105	103	101	101	101	101	101	101	109	111	111					
30							109	109	107	105	105	101	101											
MED						129	111	105	103	101	101	101	101	101	101	103	105	109	110	121				
NO						5	28	29	30	30	30	30	30	29	28	29	29	30	30	17				

TABLE 70
IONOSPHERIC DATA

(M3000)F2, June 1956

75°W Mean Time

Station: Washington, D.C. Lat. 38.7°N Long. 77.1°W Sweep 1.0 Mc to 25.0 Mc in 13.5 sec. Manual ☐ Automatic ☒

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
01	290	290	270	270	290	290	240	270	240	255	245	260	255	265	270	270	275	280	280	290	280	270	290	280	
02	270	270	280	285	280	300	330	280	270	280	260	280	290	280	285	290	290	290	285	280	290	280	280	270	
03	280	290	280	285	300	300	310	305	300	290	295	290	285	260	280	280	285	285	300	300	280	280	270	280	
04	280	290	310	300	290	280	300	310			280	280	260	270	285	280	290	270	295	290	290	280	290	285	
05	280	280	270	270	280	280	280	280	310	290	255	265	260	255	280	265	280	270	285		310	280	280	270	
06	275	265	260	280	290	315	300	320	250	280	270	270	260	270	260	260	270	280	280	290	290	285	290	275	
07	270	280	290	280	290	275	300	300	260	270	290	260	260	260		280	280	285	300	300	300	280	290	280	
08	290	280	270	295	270	270	270	265	320	270	290	280	270	280	275	270	270	290	280	280	290	290	280	285	
09	280	270	260	270	260	265	300	285	285	265	250	245	250	270	275	280	280	290	280	290	280	285	290	280	
10	290	300	300	280	300	300	290	320	270	270	275	250	250	240	280	255	265	265	290	300	290	270	270	270	
11	270	270	280	270	290	270	280	280	255	255	240	240	265	260	275	265	280	270	285	275	290	285	280	275	
12	270	280	280	270	280	290	280	280	290	270	295	280	285	280	285	285	290	290	280	290	290	285	265	280	
13	280	270	300	280	290	300	300	280	280	280	270	280	270	255	250	260	270	270	280	305	290	285	280	270	
14		280	280	270	290	300	290	260	280	290	270	270	270	250	245	265	260	285	290	295	285	280	260	260	
15	260	260	280	280	260	270	275	270	260	260	260	260	245	270	260	270	265	265	280	270	275	270	290	290	
16	280	270	275	270	290	290	295	270	280	250	265	290	305	265	250	270	290	285	300	290	285	280	275	275	
17	280	280	300	280	280	300	285	295	285	260	245	250	260	255	245	275	265	270	290	285	270	270	270	280	
18	280	270	290	270	280	290	300	310			280	230	265	255	250	265	265	265				280	280	280	
19	290	275	265	290	280	310	300	310	290	270	270	250	250	255	260	260	270	280	280	270	285	275	275	280	
20	275	275	270	280	275	280	300	300	290	280	275	255	275	265	270	270	260	275	275	270	290	285	270	270	
21	275	285	265	270	280	280	290	270	270	280	300	285	285	270	280	270	280	290	290	290	295	280	270	265	
22	270	290	270	280	285	300	310	300	270	270	245	235	245	260	265	260	265	275	290	285	275	275	280	280	
23	275	265	275	275	265	300	280	270	270	275	260	255	270	255	270	260	265	270	280	320	285	270	285	260	
24	265	275	270	270	300	300	300	250	260	265		225	255	230	250	240	250	250	270	265	270	270	270	265	
25	275	250	250	230	270	270											260	265	275	280	300	275	280	270	
26	295	290	280	290	280	280	290		250	250			245	245	285	250	275	280	295	280	275	280	285	270	
27	270	275	300	280	275	280	250	230	255	250			240	250	260	245		280	280	280	280	300	290		
28	290	290	290	300	290	310	290	285	265	260	270	265		260	270	265	270	290	290	310	315	300	275	280	
29	290	290	305	310	285	255	240	255	230	260	270	260	260	240	240	250	290	270	280	300	290	285		265	
30	285	270	270	280	290	320	280	275	260	270	295	285	260		290	250	270	270	270	290	300	300	265	280	
MED	280	280	280	280	280	290	290	280	270	270	270	260	260	260	270	265	270	275	280	290	290	280	280	280	
NO	29	30	30	30	30	30	30	30	28	28	30	30	30	29	28	30	29	29	29	29	28	29	30	29	30

CENTRAL RADIO PROPAGATION LABORATORY, NATIONAL BUREAU OF STANDARDS, BOULDER, COLO.

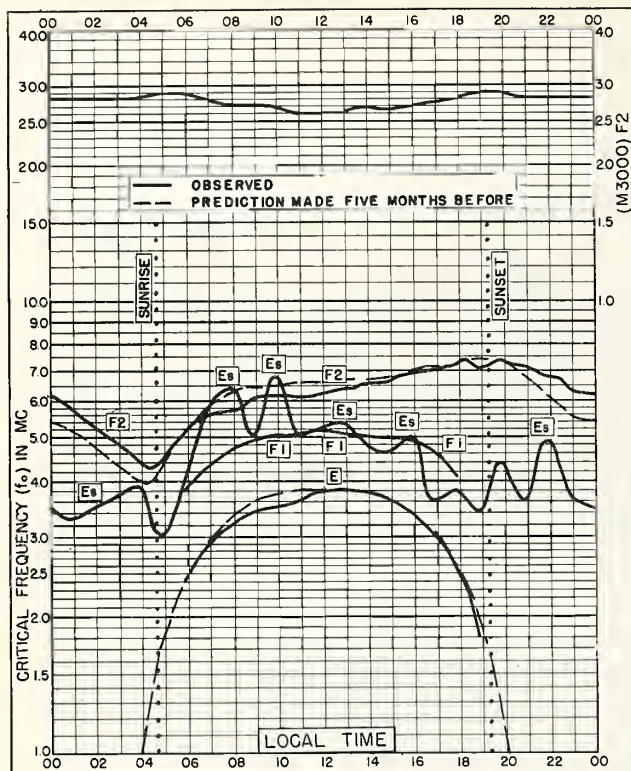


Fig. 1. WASHINGTON, D. C.
38.7°N, 77.1°W

JUNE 1956

NBS 503

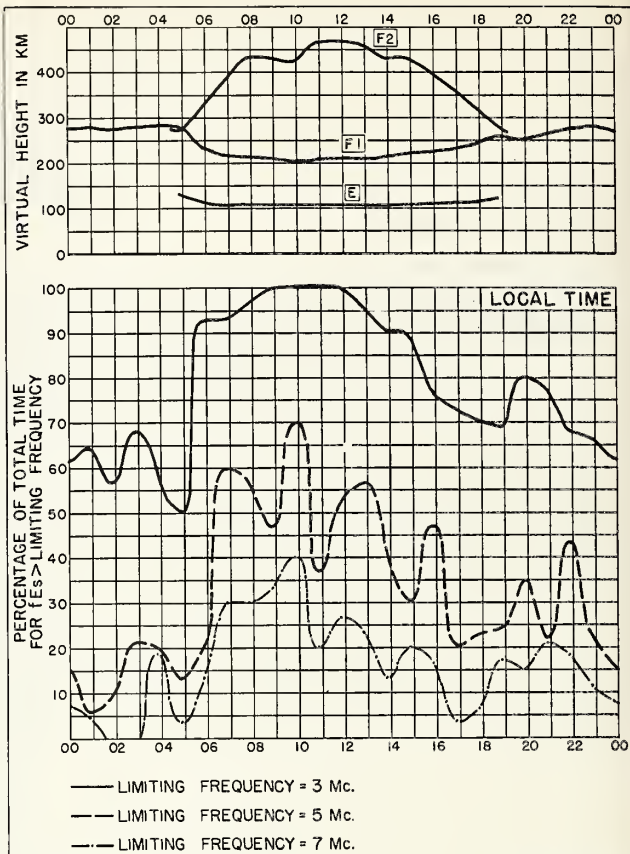


Fig. 2. WASHINGTON, D. C.

JUNE 1956

NBS 490

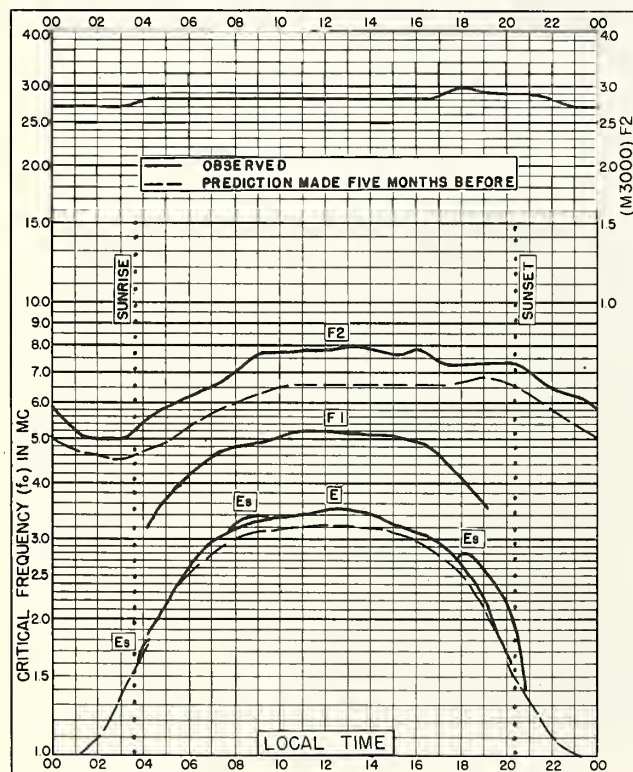


Fig. 3. UPSALA, SWEDEN
59.8°N, 17.6°E

MAY 1956

NBS 503

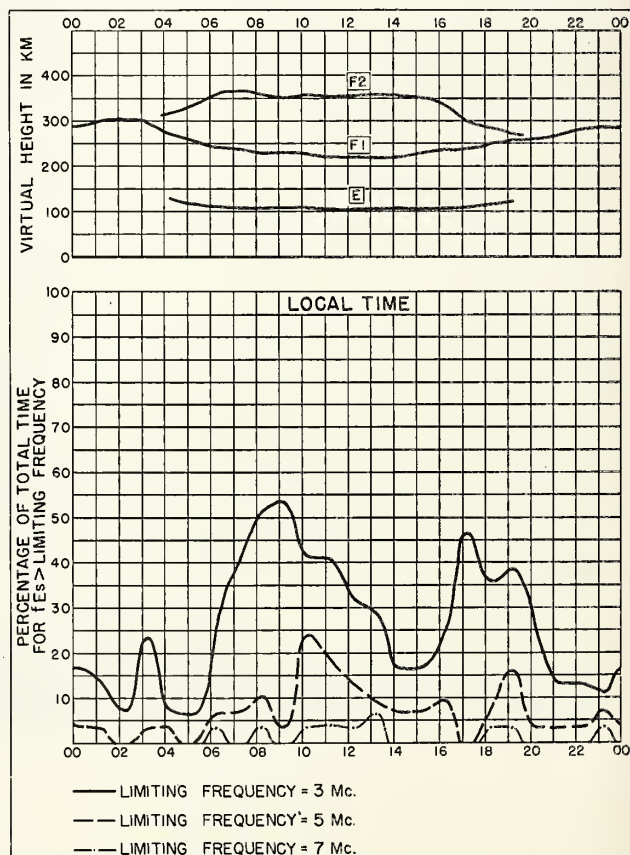


Fig. 4. UPSALA, SWEDEN

MAY 1956

NBS 490

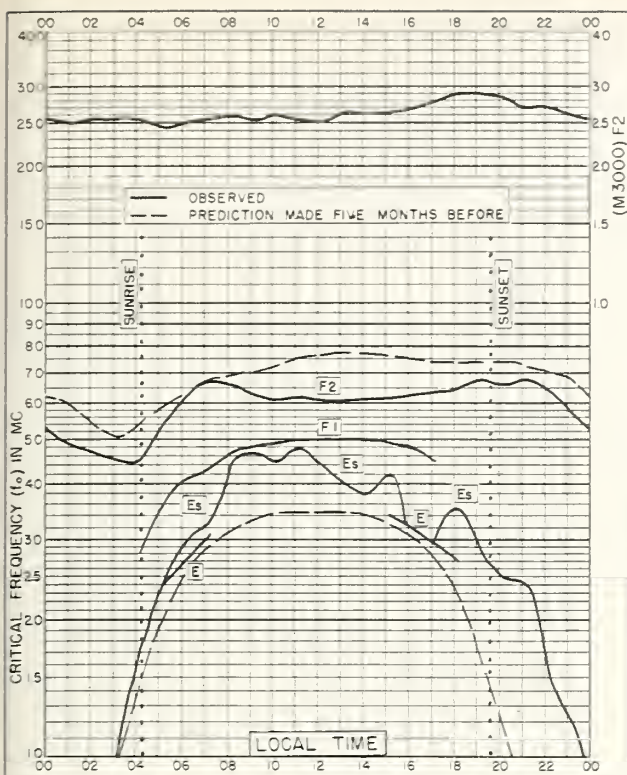


Fig. 5. ADAK, ALASKA
51.9°N, 176.6°W

MAY 1956

NBS 503

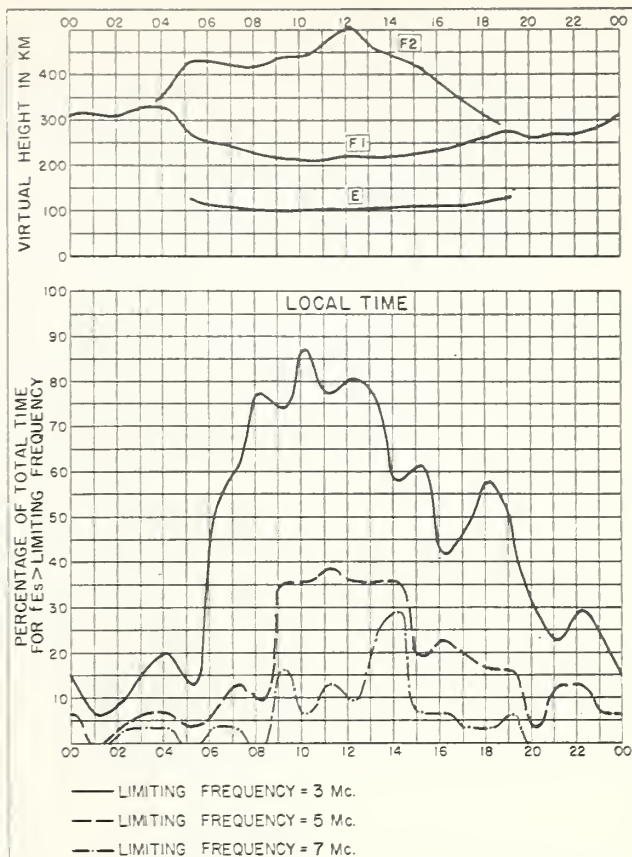


Fig. 6. ADAK, ALASKA

MAY 1956

NBS 490

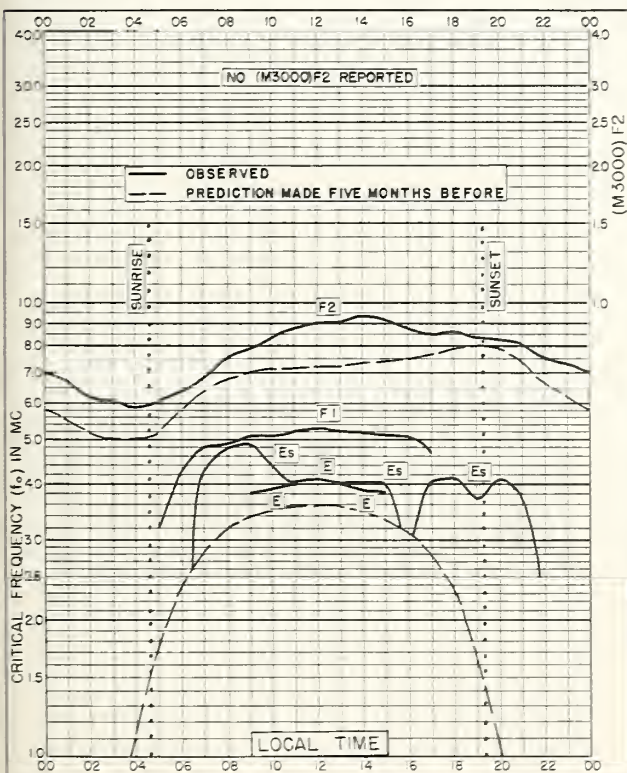


Fig. 7. GRAZ, AUSTRIA
47.1°N, 15.5°E

MAY 1956

NBS 503

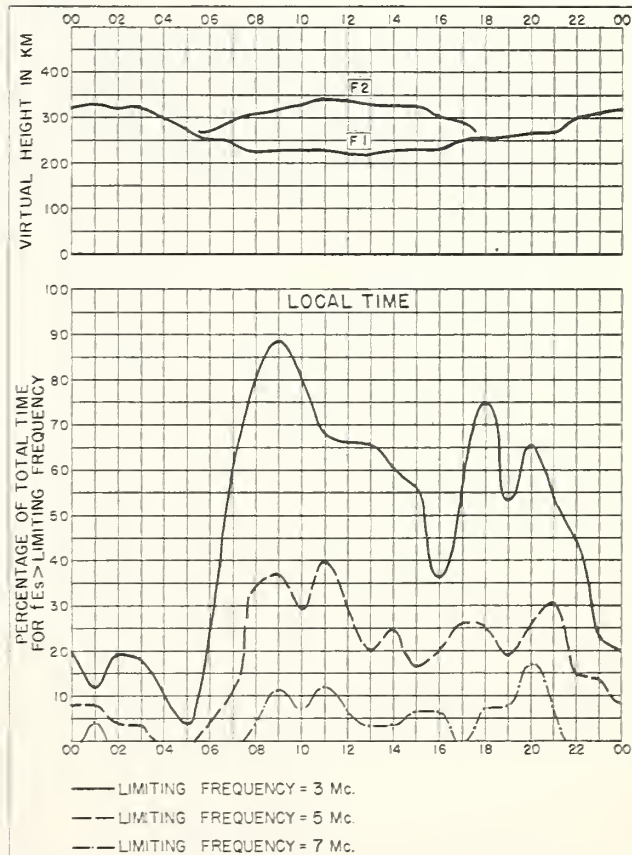


Fig. 8. GRAZ, AUSTRIA

MAY 1956

NBS 490

NBS 490

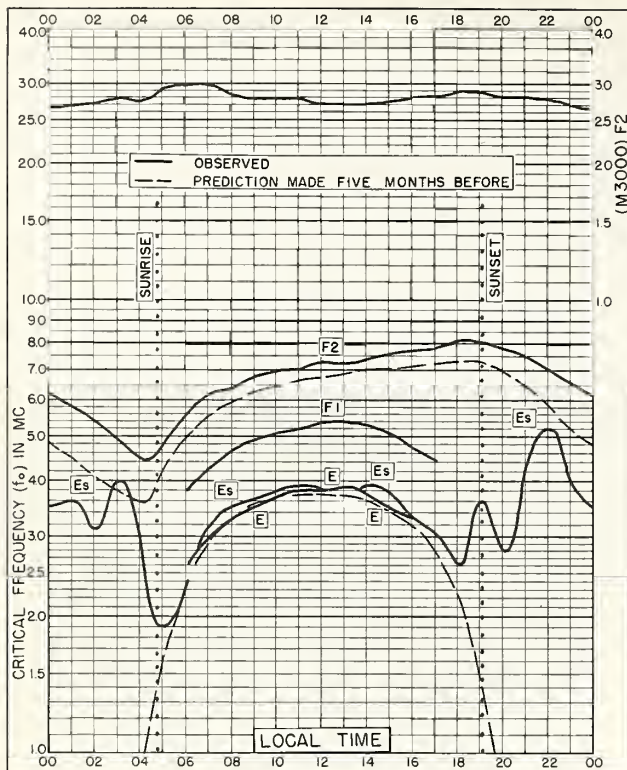


Fig. 9. FT. MONMOUTH, NEW JERSEY
40.3°N, 74.1°W MAY 1956

NBS 505

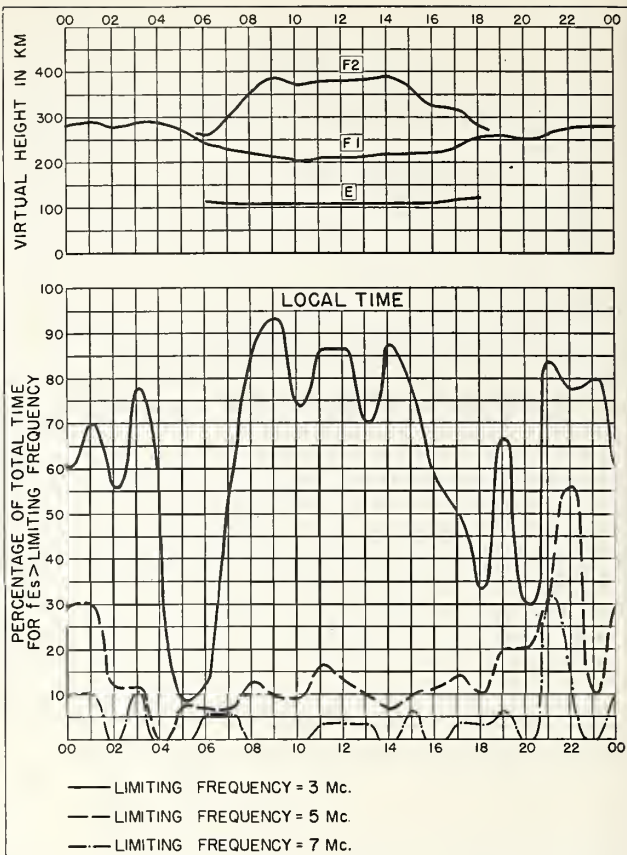


Fig. 10. FT. MONMOUTH, NEW JERSEY MAY 1956

NBS 490

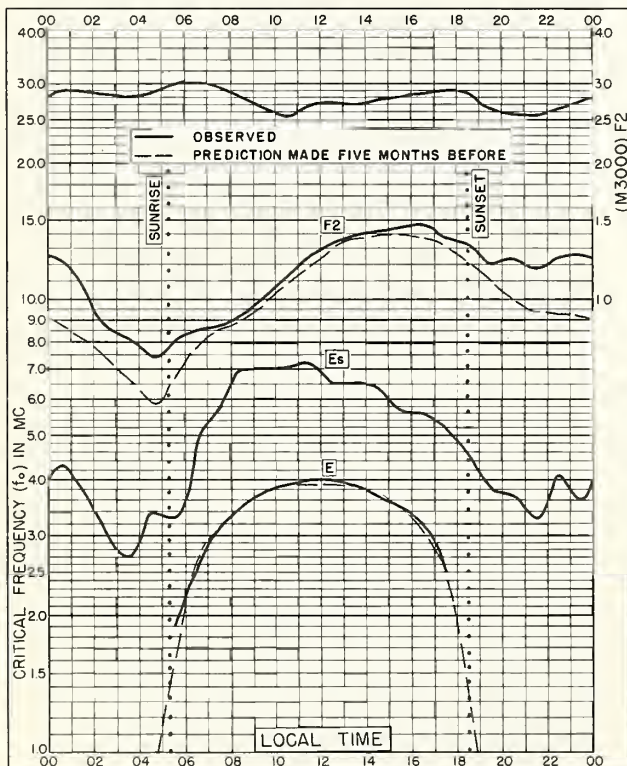


Fig. 11. OKINAWA I.
26.3°N, 127.8°E MAY 1956

NBS 503

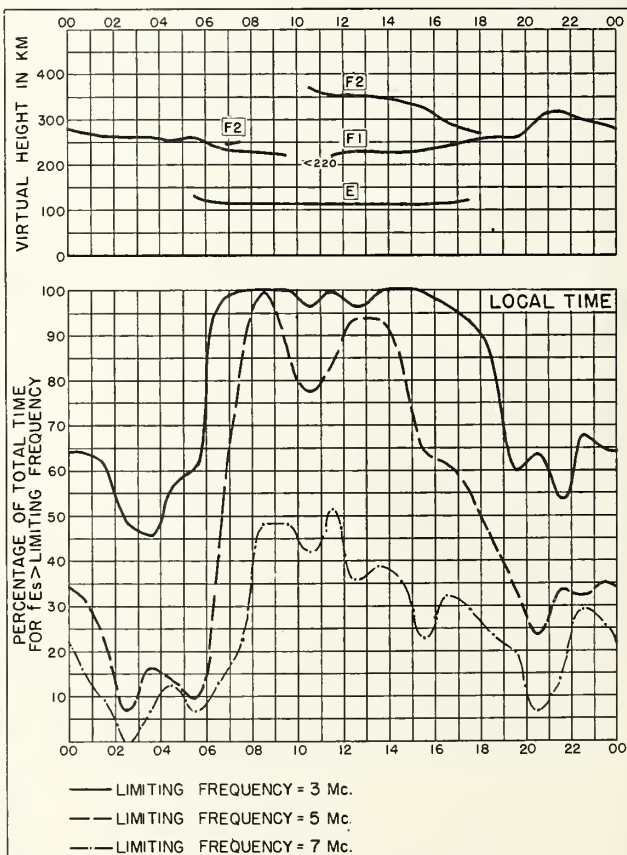


Fig. 12. OKINAWA I. MAY 1956

NBS 490

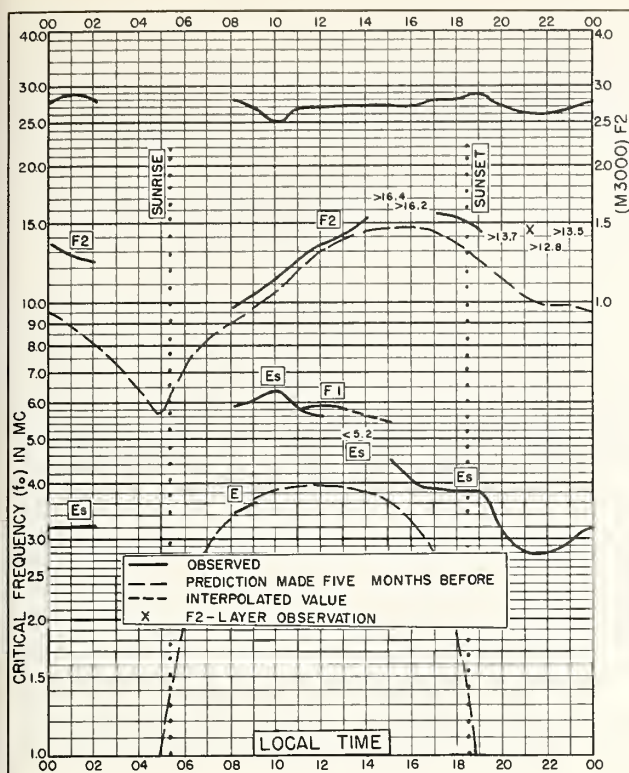


Fig. 13. FORMOSA, CHINA
25.0°N, 121.5°E

MAY 1956

NBS 503

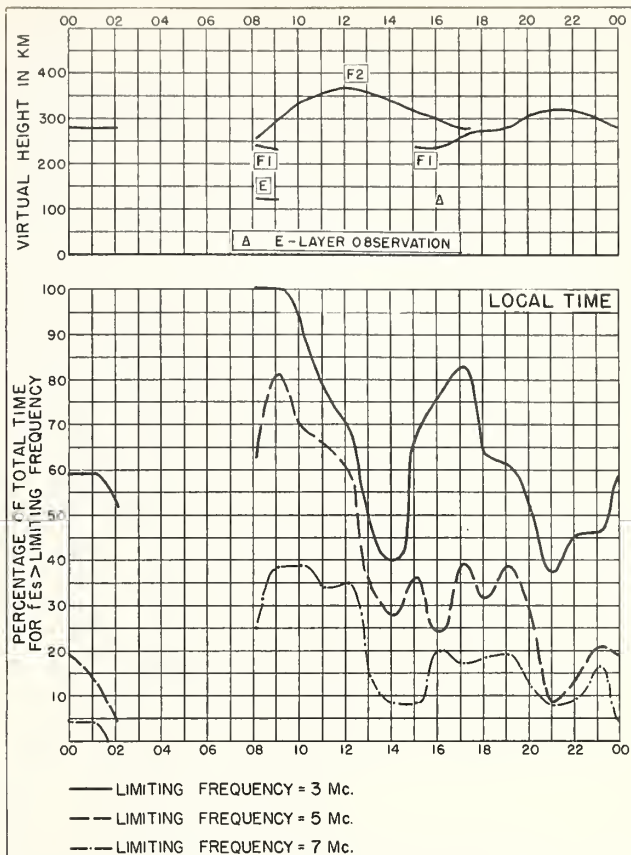


Fig. 14. FORMOSA, CHINA

MAY 1956

NBS 490

NBS 490

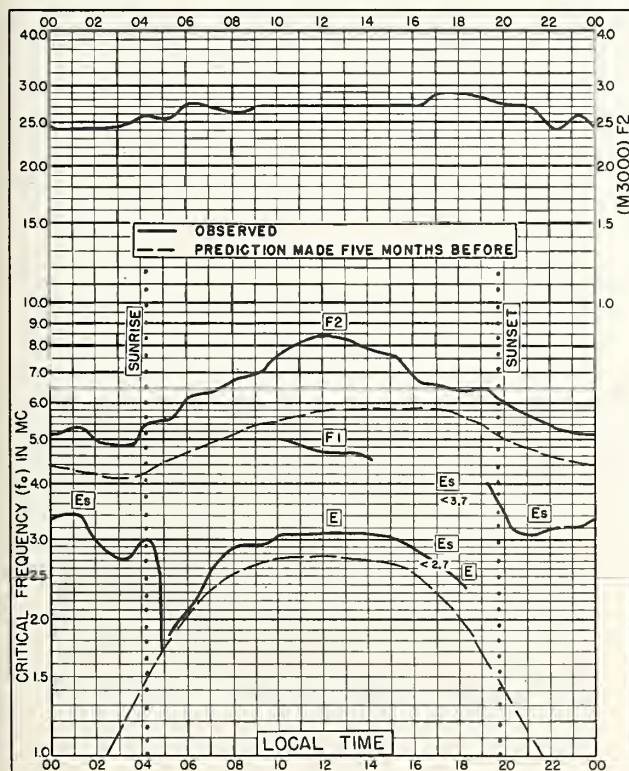


Fig. 15. TROMSO, NORWAY
69.7°N, 19.0°E

APRIL 1956

NBS 503

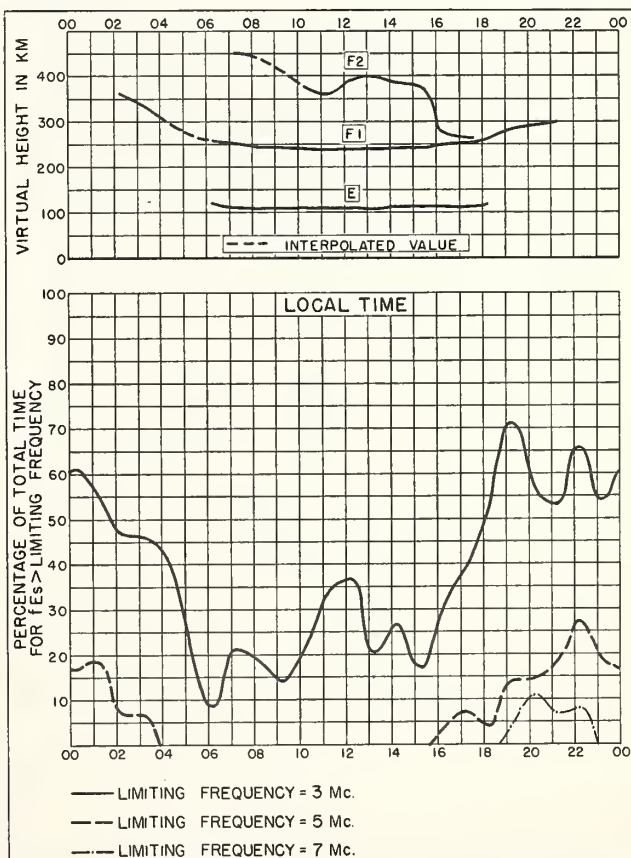


Fig. 16. TROMSO, NORWAY

APRIL 1956

NBS 490

NBS 490

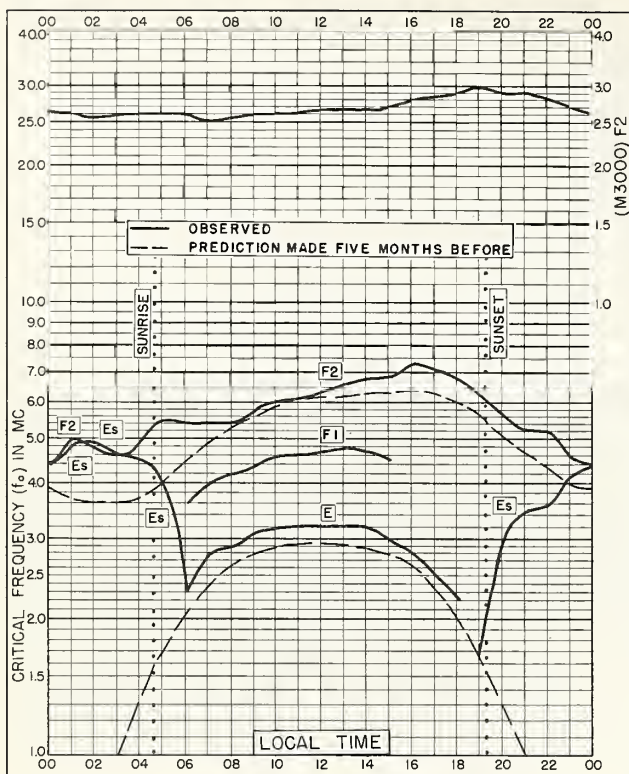


Fig. 17. FAIRBANKS, ALASKA
64.9°N, 147.8°W

APRIL 1956

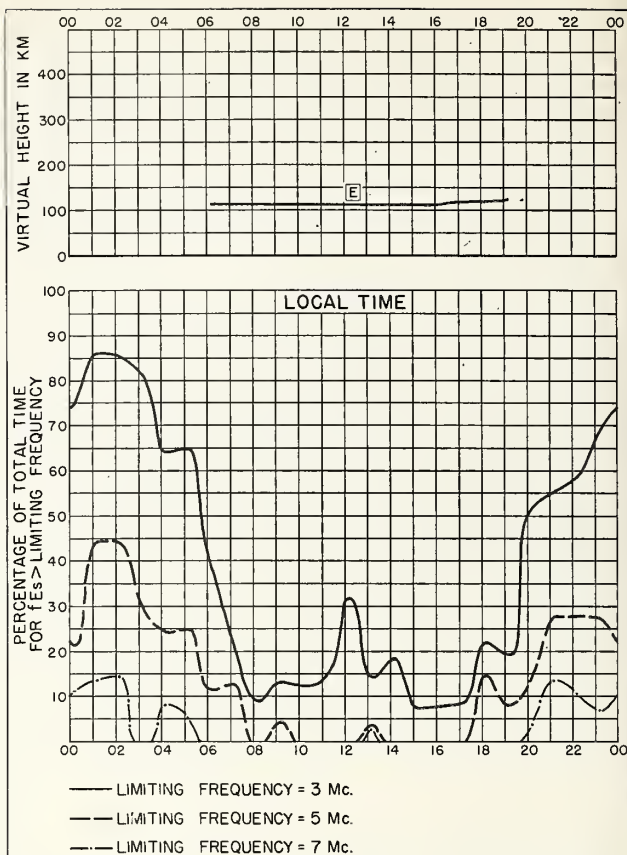


Fig. 18. FAIRBANKS, ALASKA

APRIL 1956

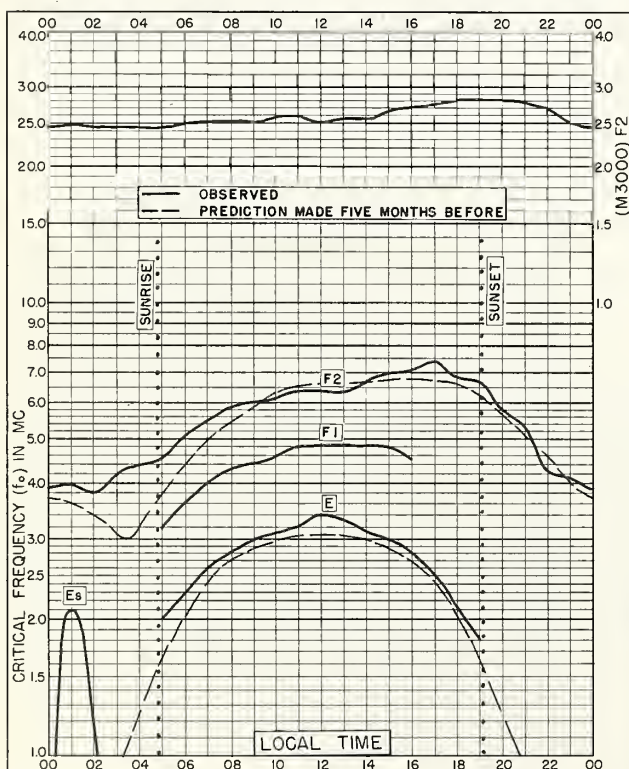


Fig. 19. ANCHORAGE, ALASKA
61.2°N, 149.9°W

APRIL 1956

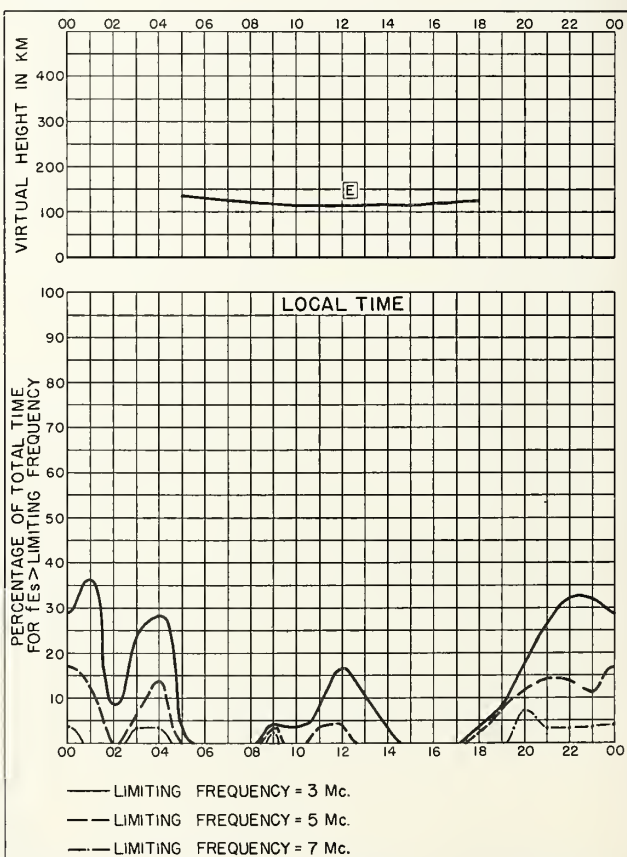


Fig. 20. ANCHORAGE, ALASKA

APRIL 1956

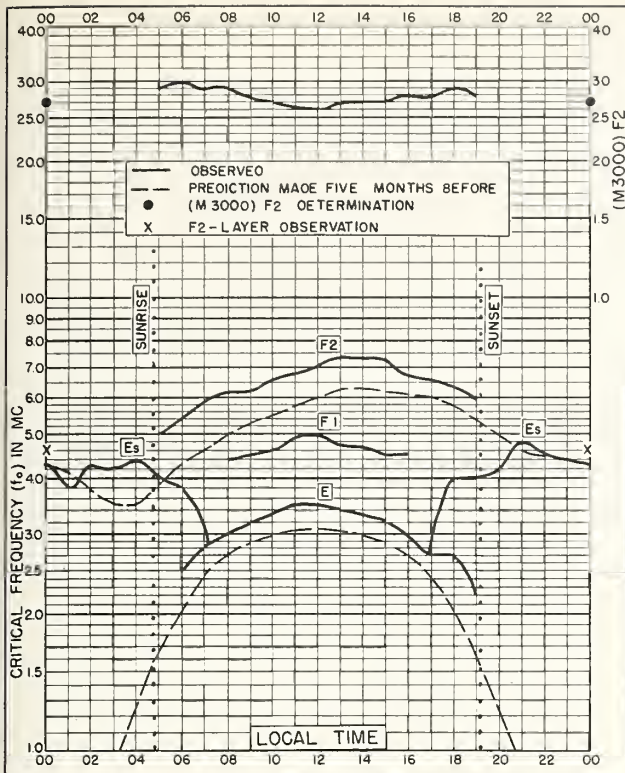


Fig. 21. NARSARSSUAK, GREENLAND
61.2°N, 45.4°W APRIL 1956

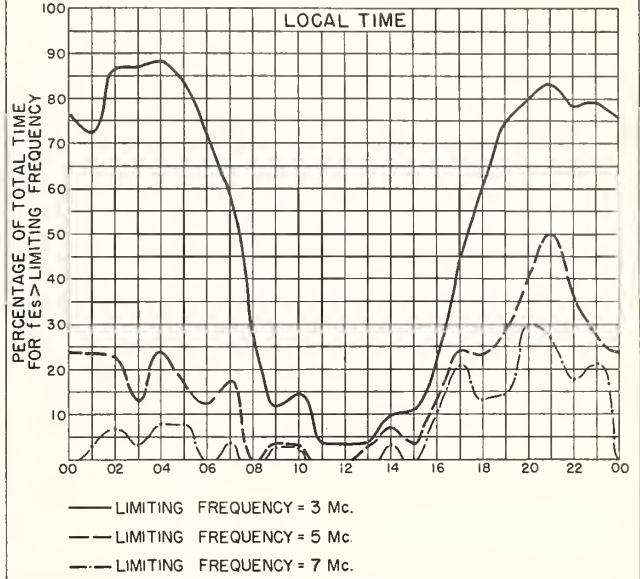
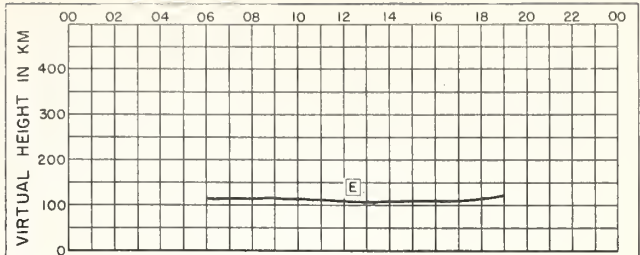


Fig. 22. NARSARSSUAK, GREENLAND APRIL 1956

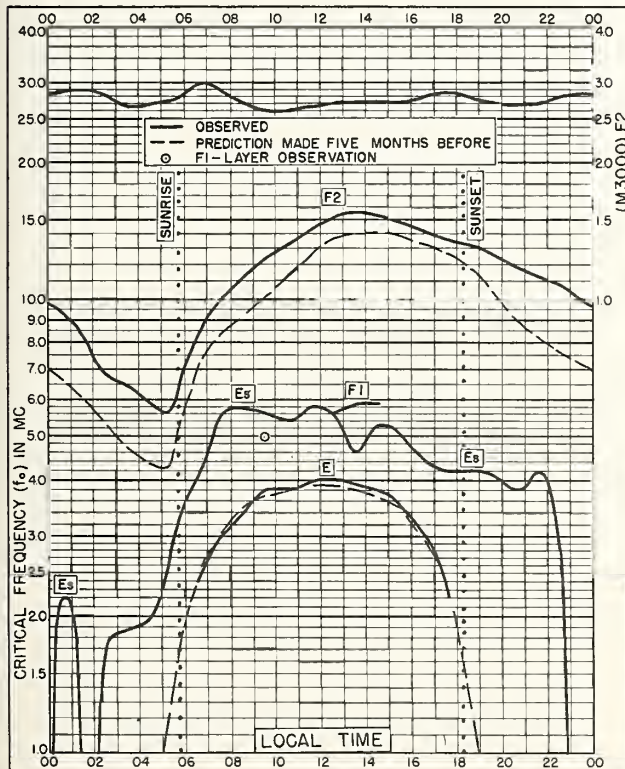


Fig. 23. MAUI, HAWAII
20.8°N, 156.5°W APRIL 1956

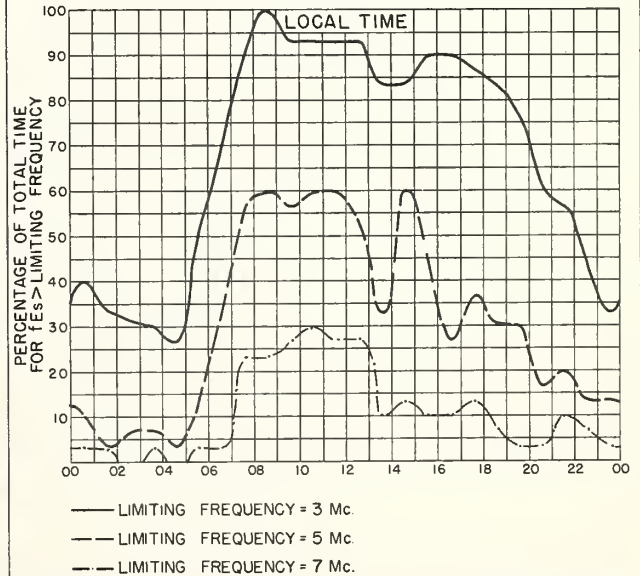
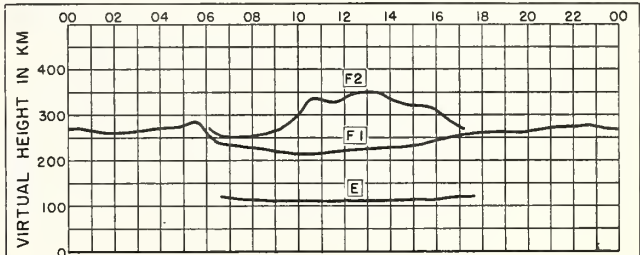


Fig. 24. MAUI, HAWAII APRIL 1956

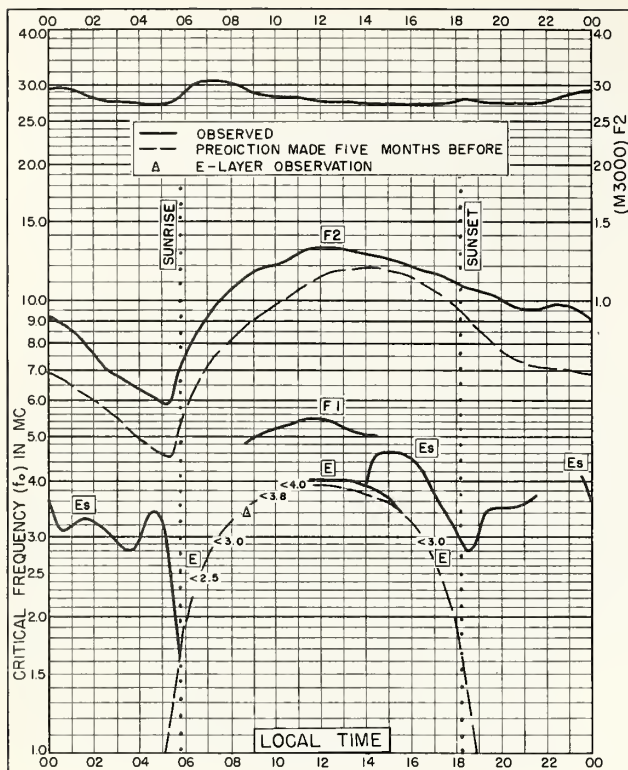


Fig. 25. PUERTO RICO, W.I.
18.5°N, 67.2°W

APRIL 1956

NBS 503

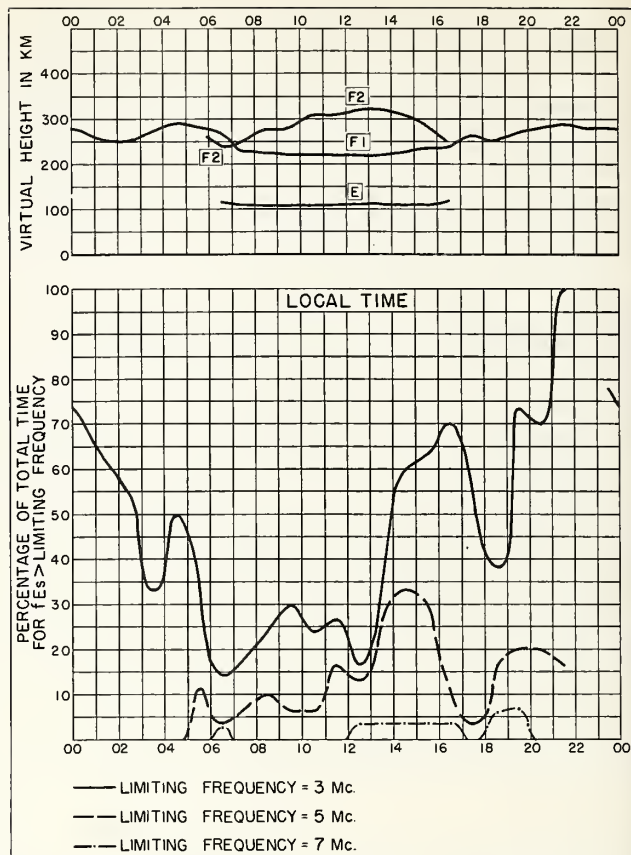


Fig. 26. PUERTO RICO, W.I.

APRIL 1956

NBS 490

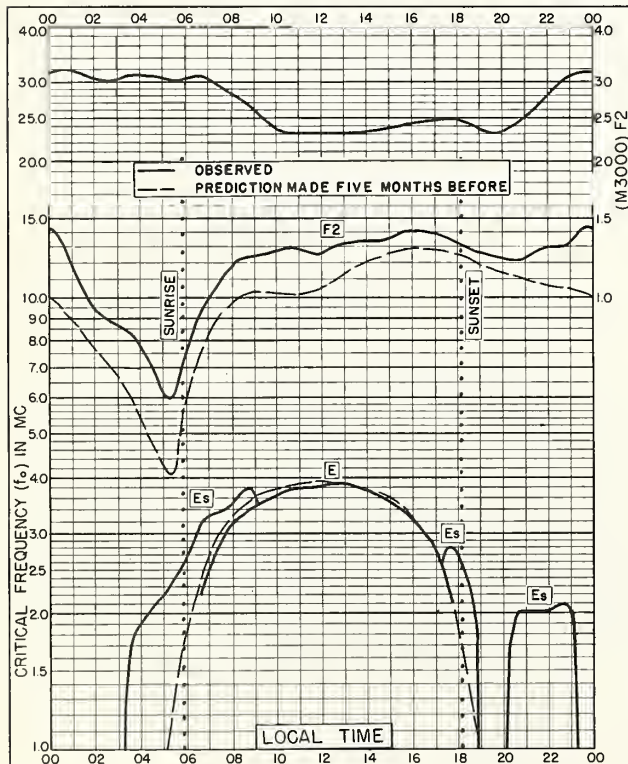


Fig. 27. GUAM I.
13.6°N, 144.9°E

APRIL 1956

NBS 503

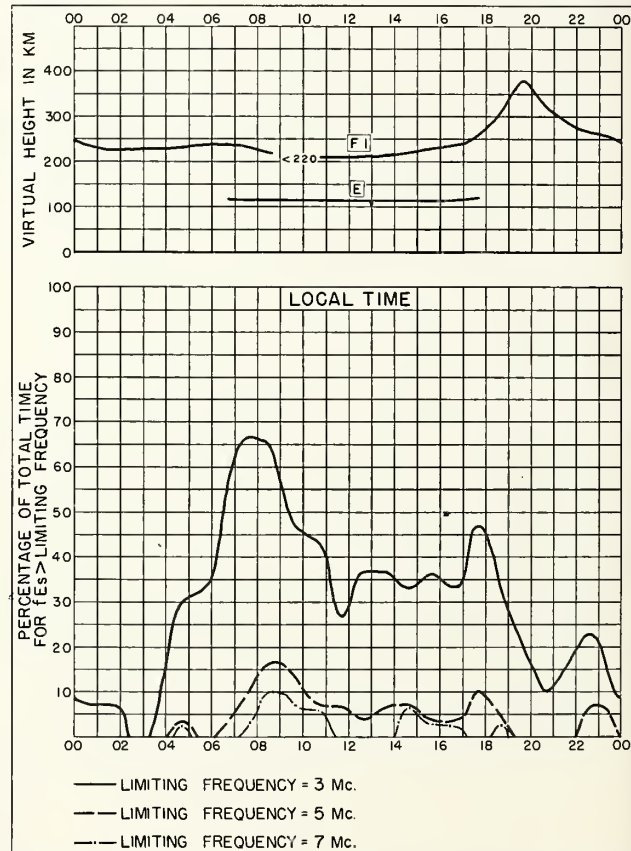
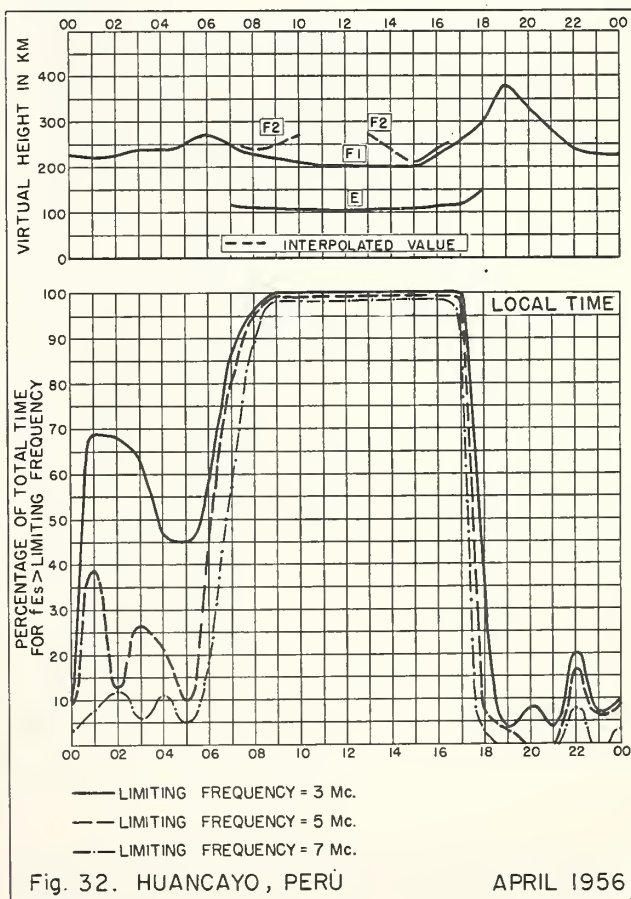
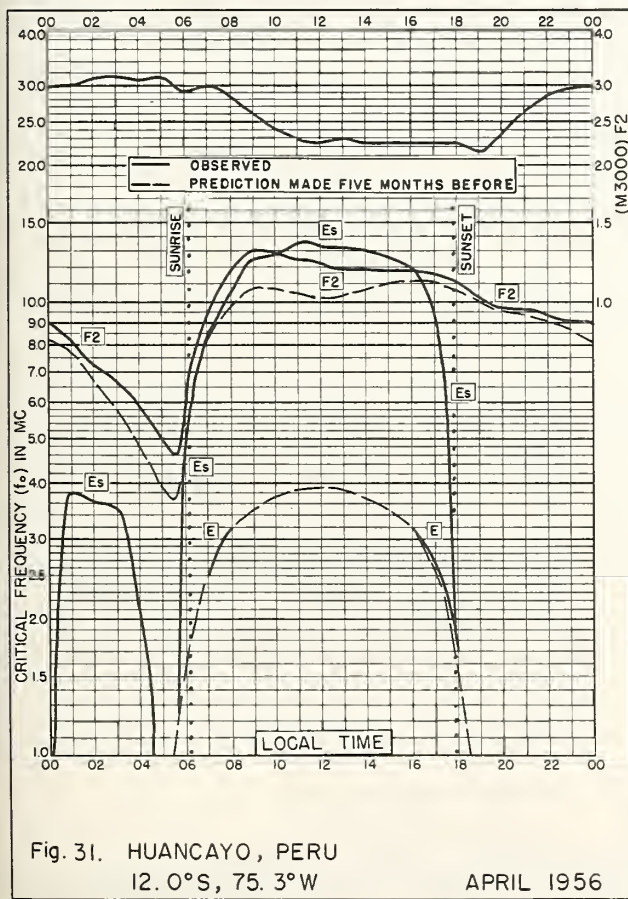
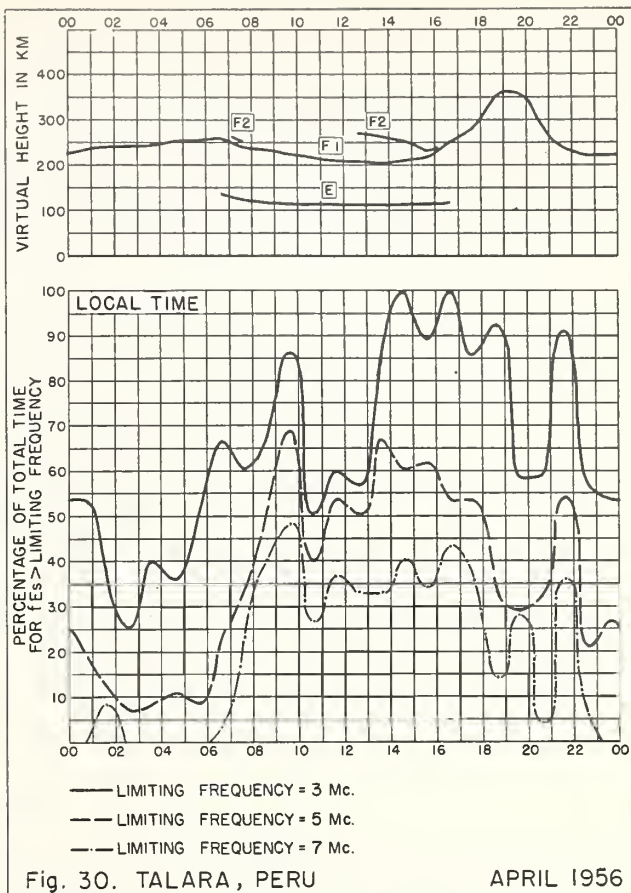
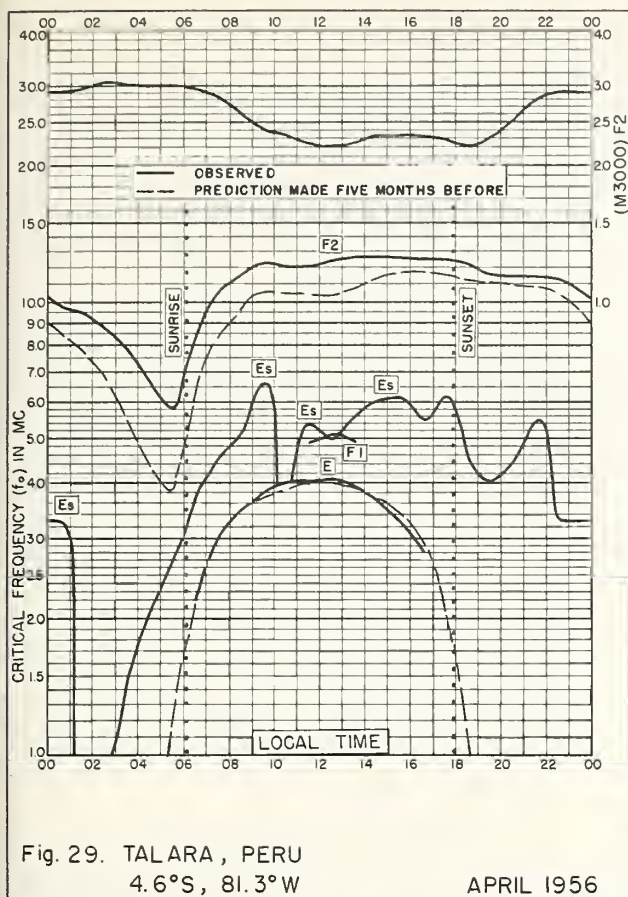


Fig. 28. GUAM I.

APRIL 1956

NBS 490

NBS 490



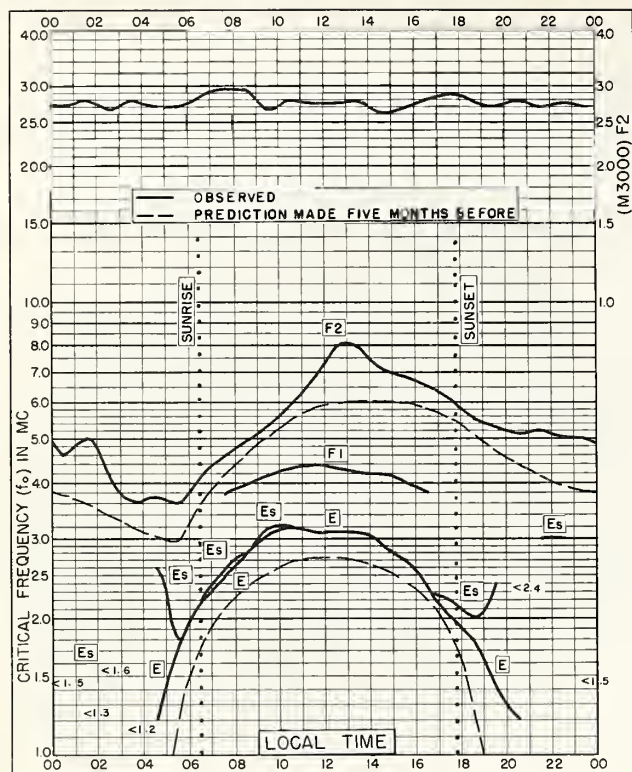


Fig. 33. BAKER LAKE, CANADA
64.3°N, 96.0°W

MARCH 1956

NBS 503

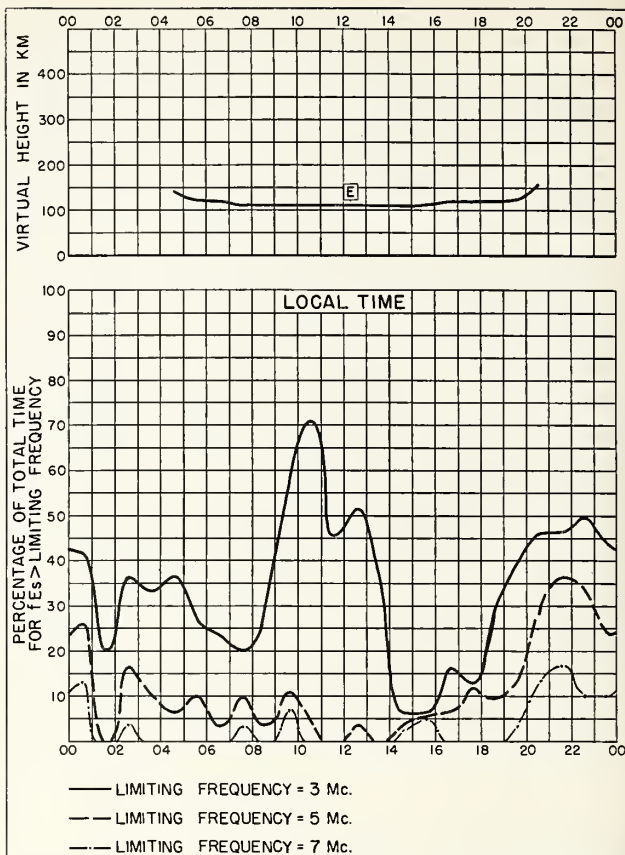


Fig. 34. BAKER LAKE, CANADA

MARCH 1956

NBS 490

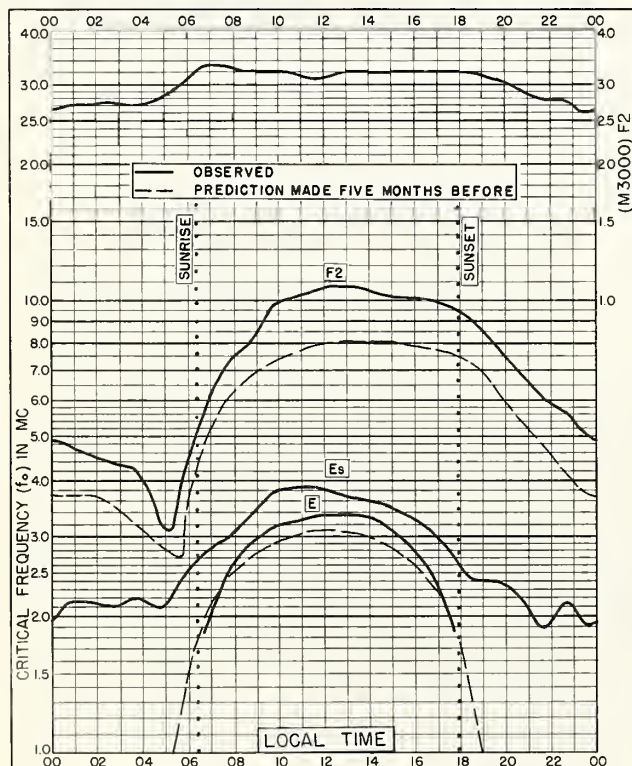


Fig. 35. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E

MARCH 1956

NBS 503

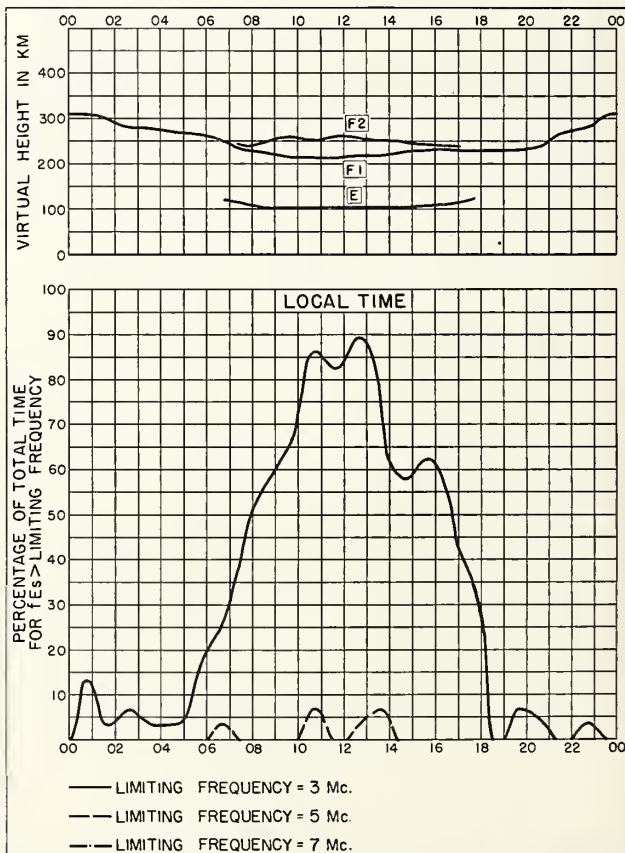


Fig. 36. LINDAU/HARZ, GERMANY

MARCH 1956

NBS 490

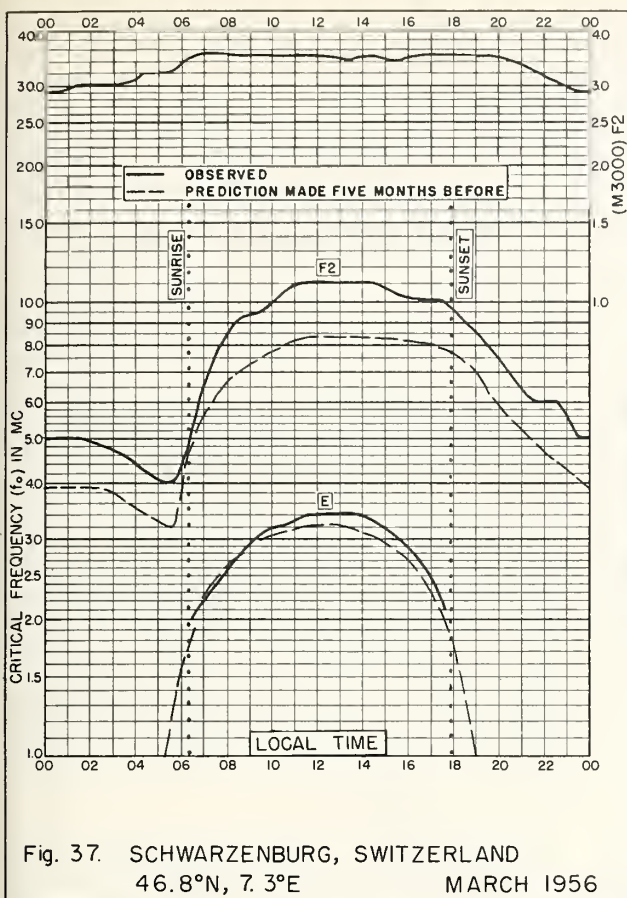


Fig. 37. SCHWARZENBURG, SWITZERLAND
46.8°N, 7.3°E
MARCH 1956

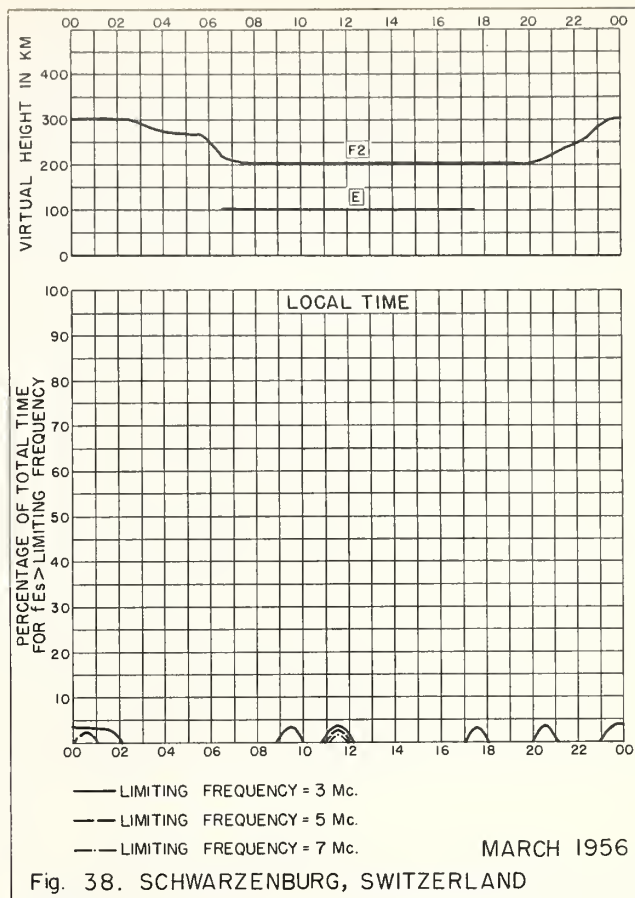


Fig. 38. SCHWARZENBURG, SWITZERLAND
MARCH 1956

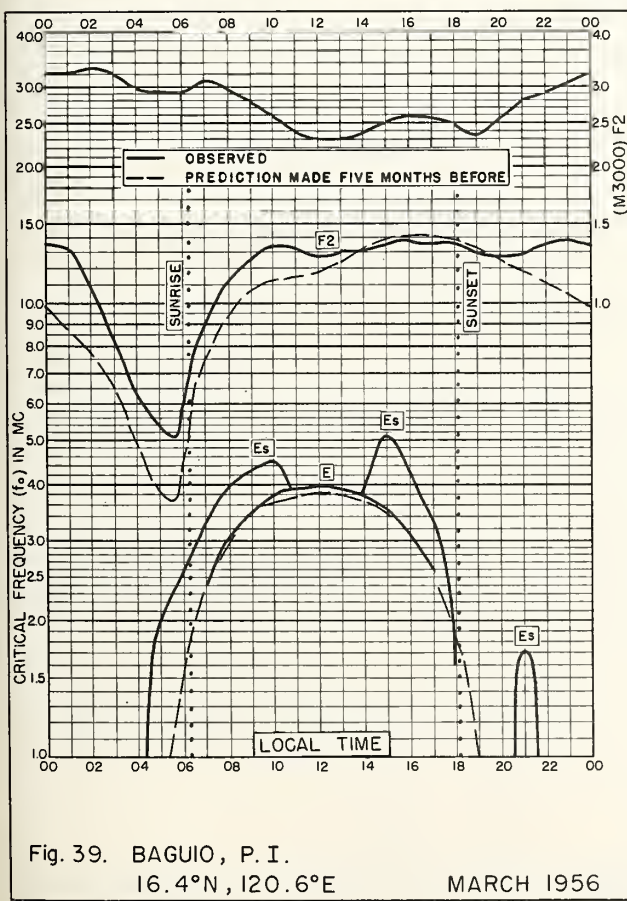


Fig. 39. BAGUIO, P. I.
16.4°N, 120.6°E
MARCH 1956

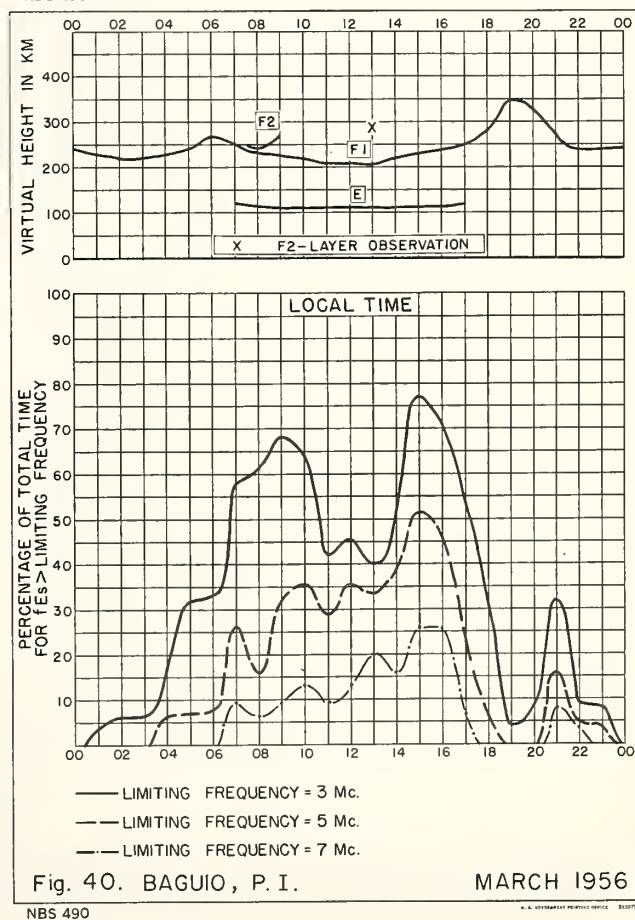


Fig. 40. BAGUIO, P. I.
MARCH 1956

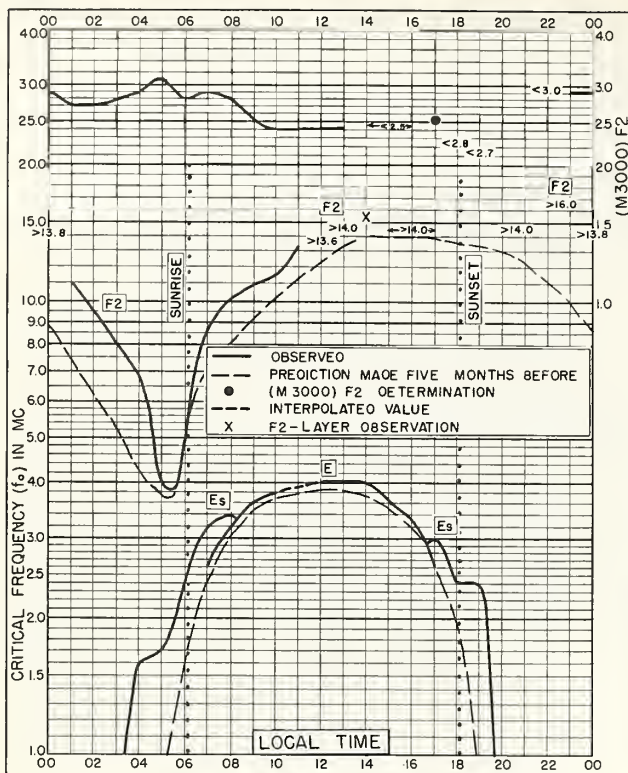


Fig. 41. LEOPOLDVILLE, BELGIAN CONGO
4.4°S, 15.2°E
MARCH 1956

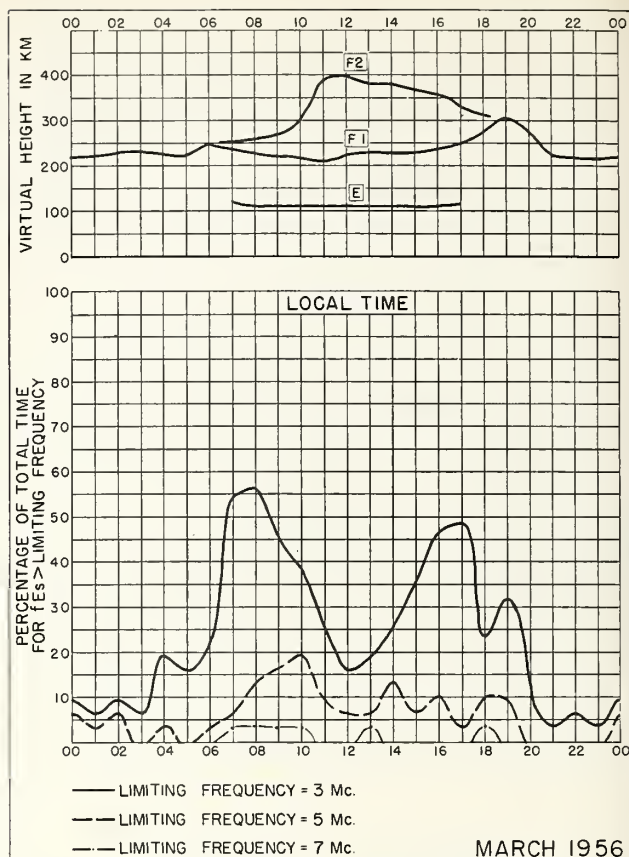


Fig. 42. LEOPOLDVILLE, BELGIAN CONGO
MARCH 1956

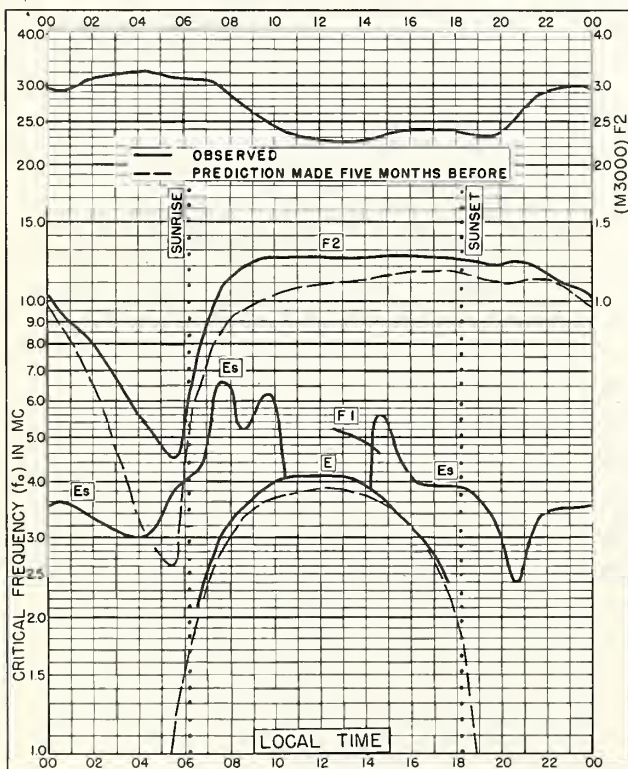


Fig. 43. TALARA, PERU
4.6°S, 81.3°W
MARCH 1956

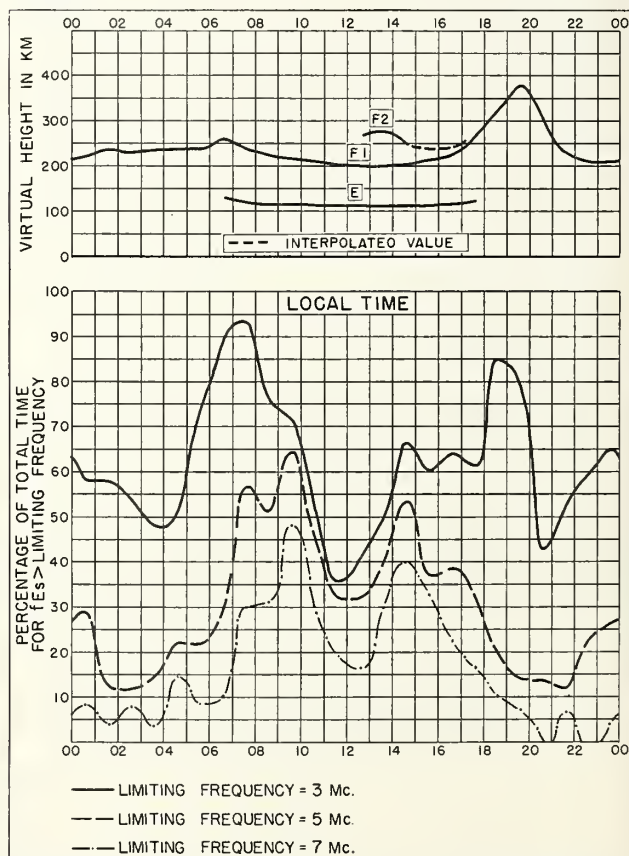
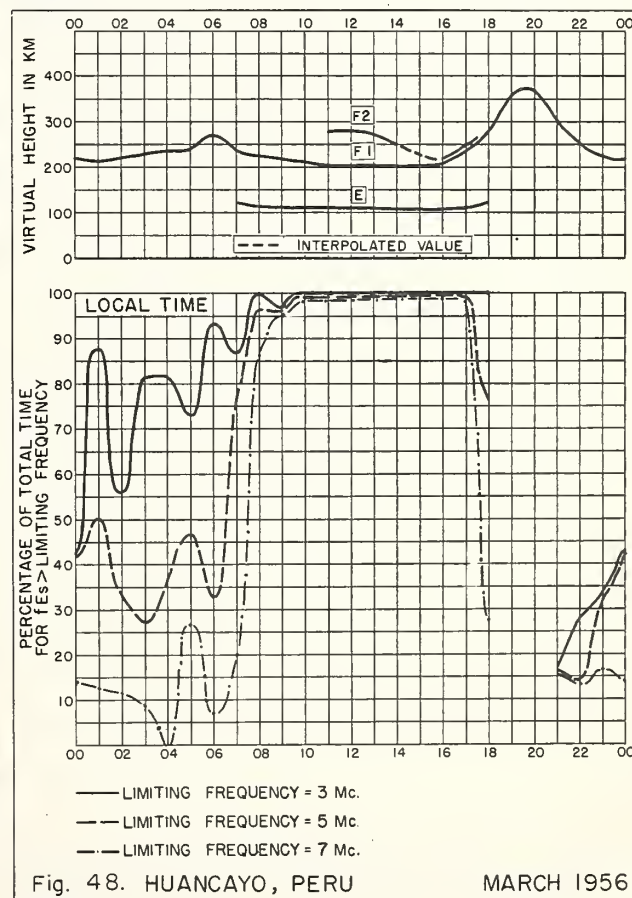
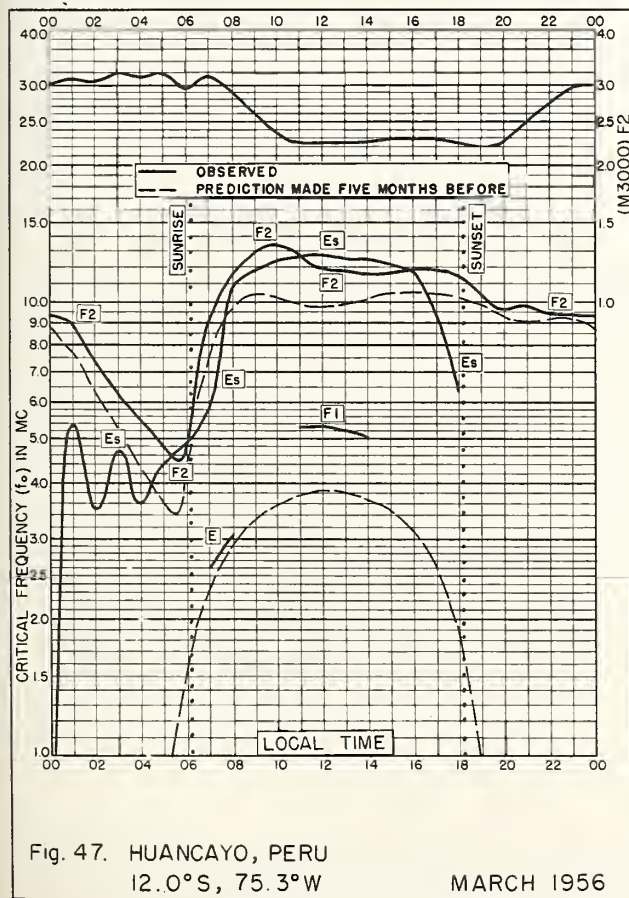
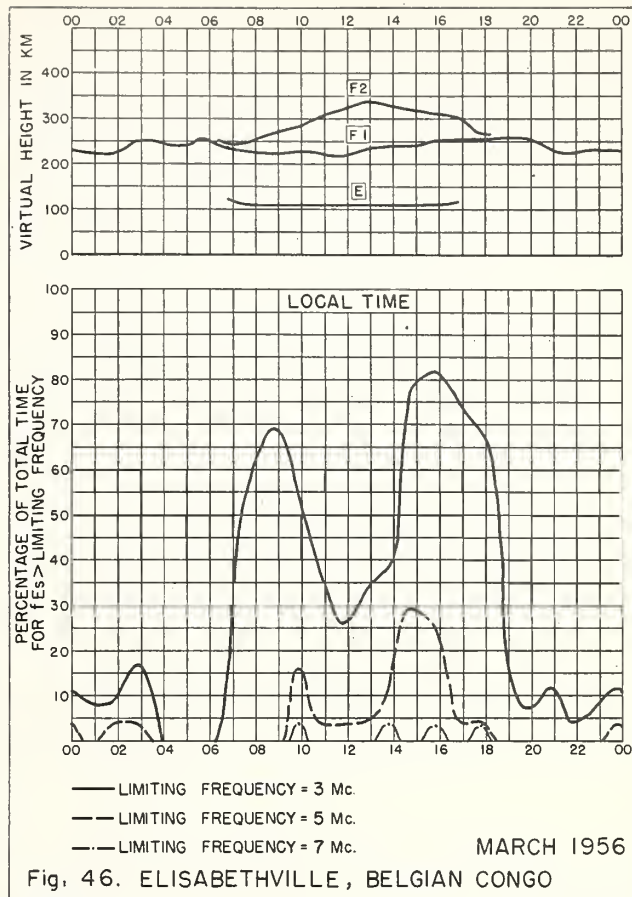
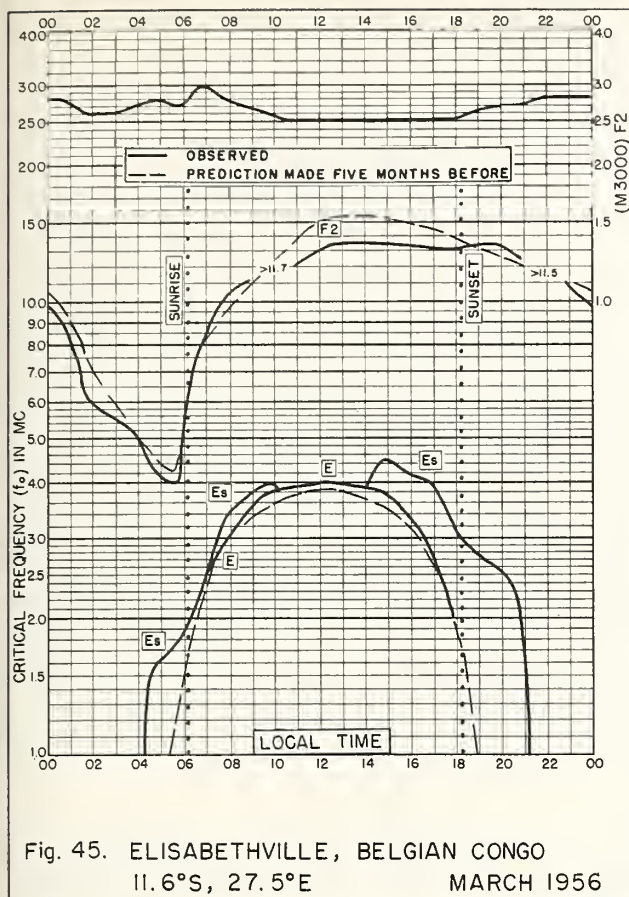


Fig. 44. TALARA, PERU
MARCH 1956



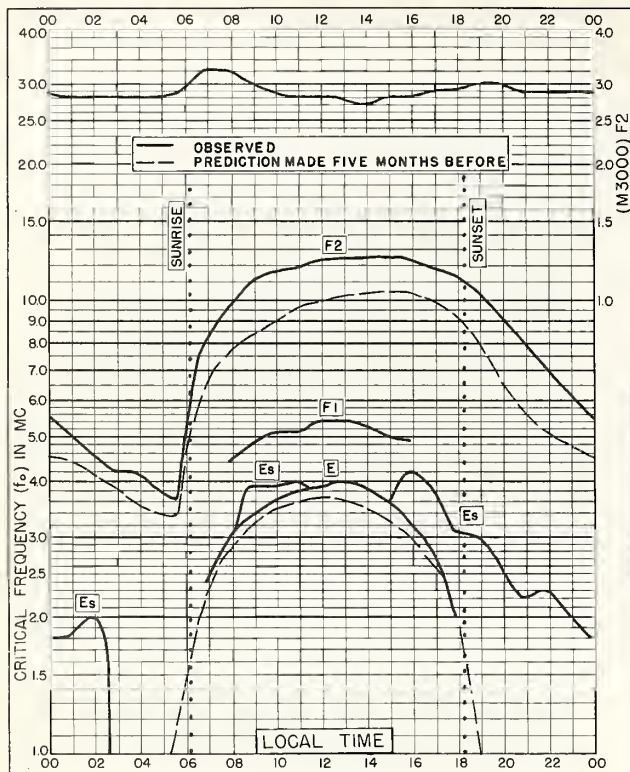


Fig. 49. JOHANNESBURG, UNION OF S. AFRICA
26.2°S, 28.1°E MARCH 1956

NBS 503

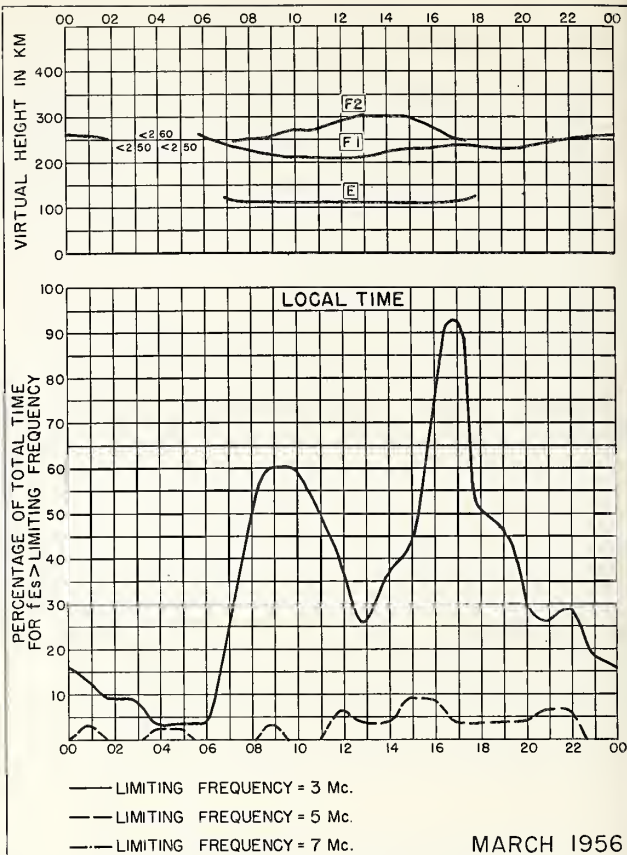


Fig. 50. JOHANNESBURG, UNION OF S. AFRICA

NBS 490

U.S. GOVERNMENT PRINTING OFFICE: 1955

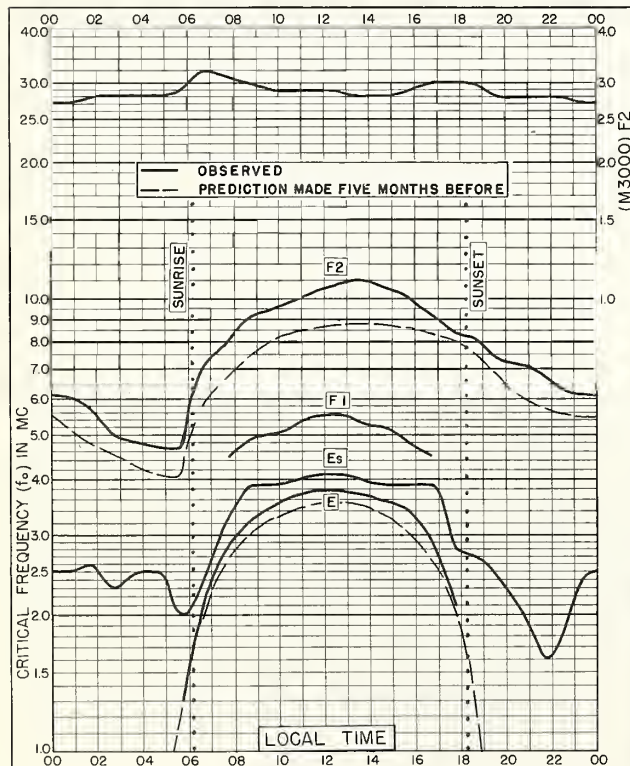


Fig. 51. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E MARCH 1956

NBS 503

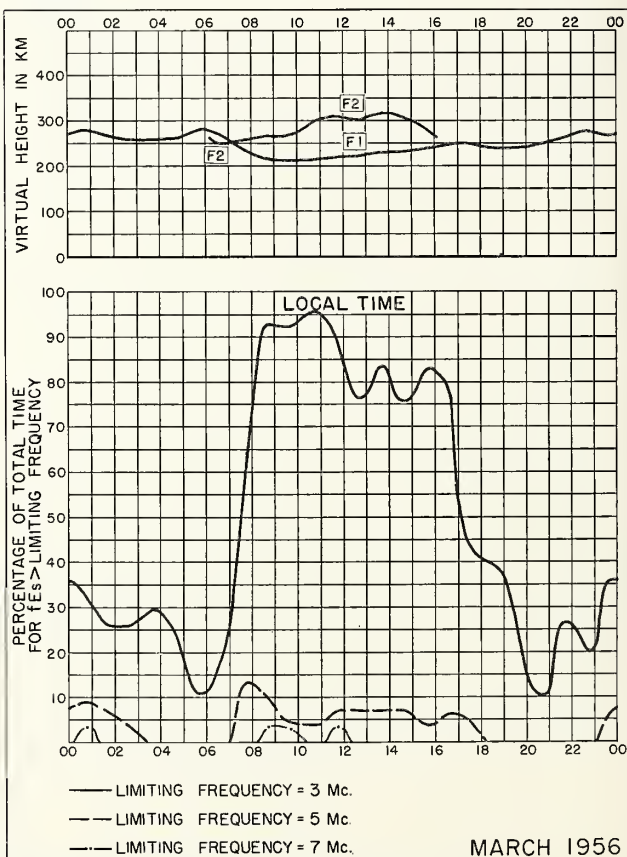
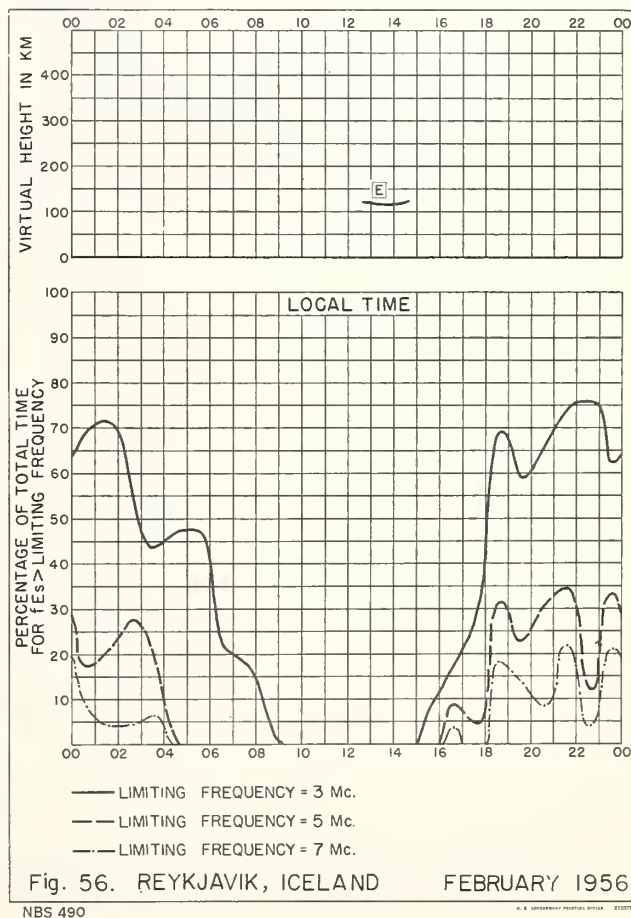
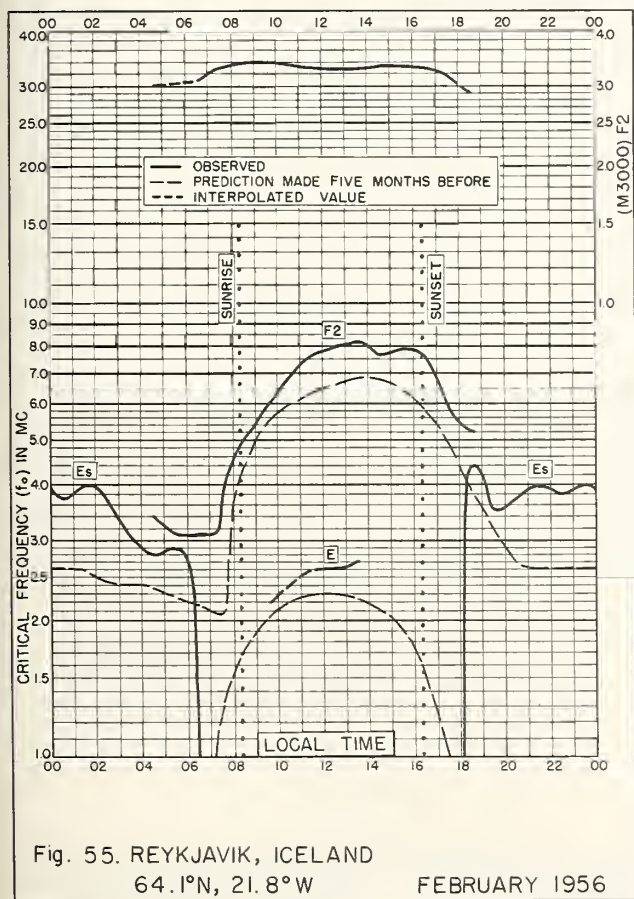
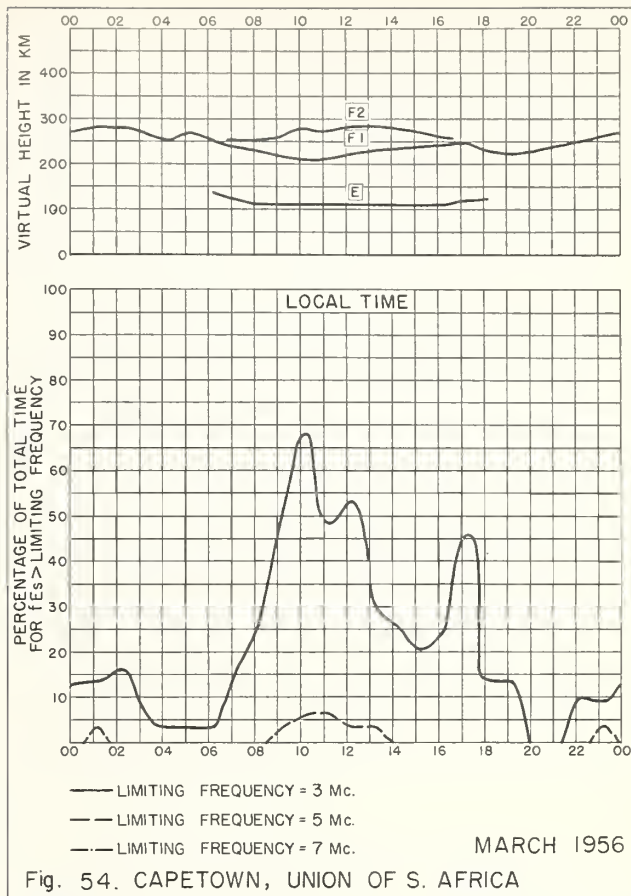
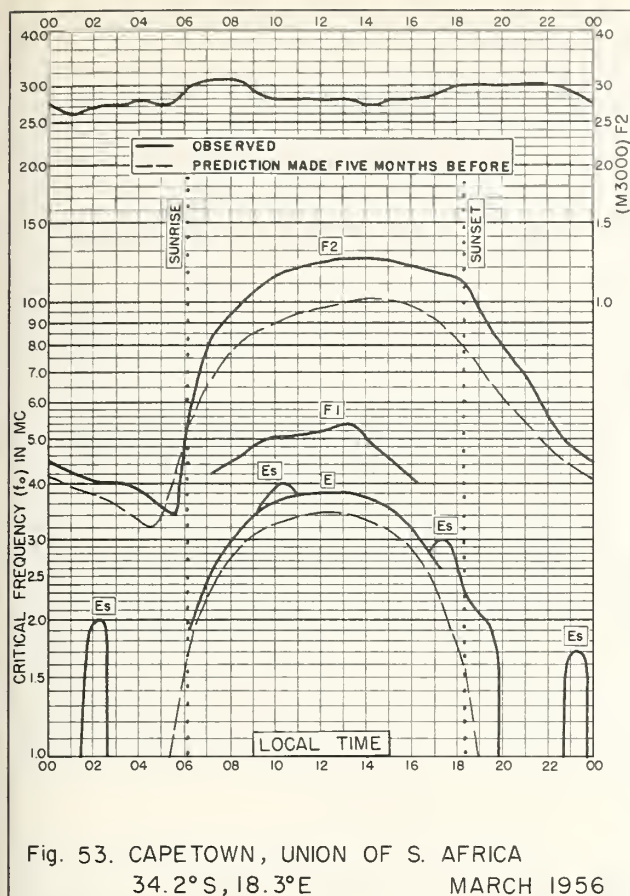


Fig. 52. WATHEROO, W. AUSTRALIA

NBS 490

U.S. GOVERNMENT PRINTING OFFICE: 1955



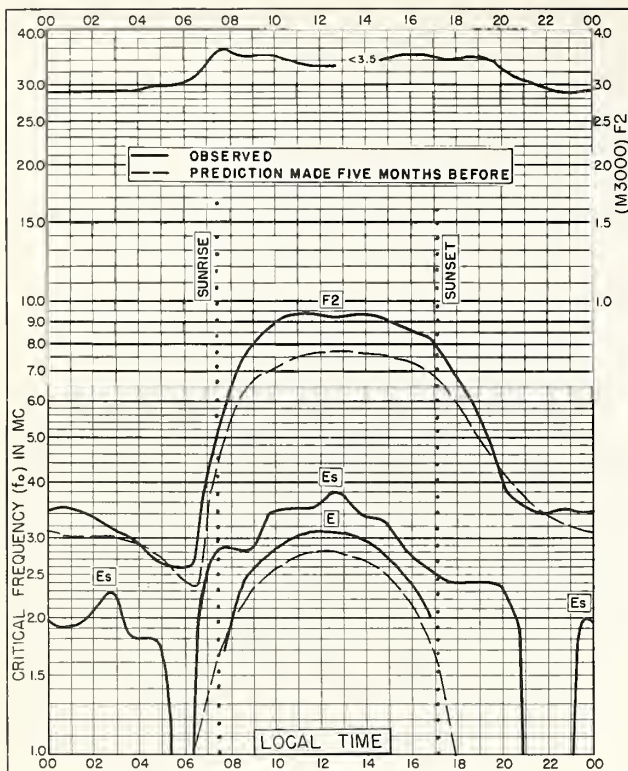


Fig. 57. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E
FEBRUARY 1956

NBS 503

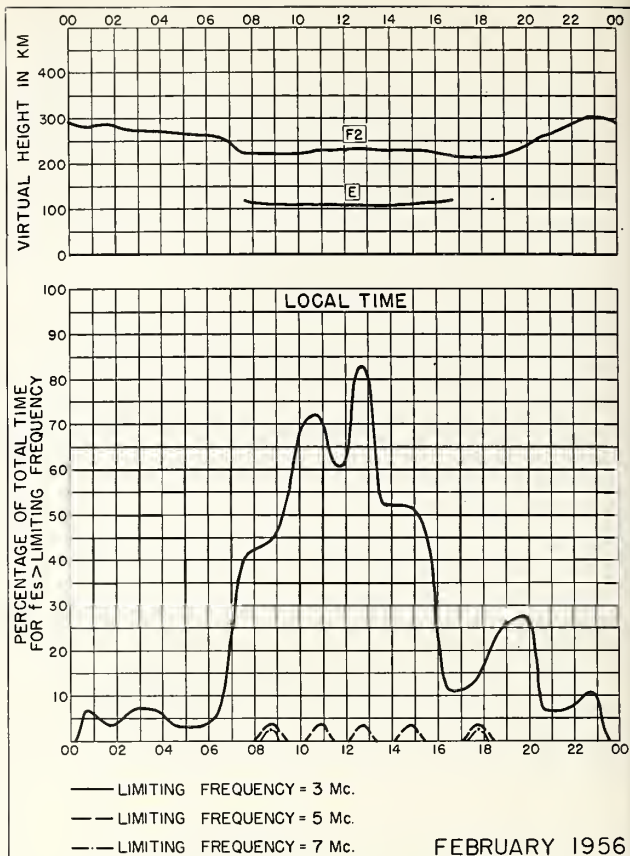


Fig. 58. LINDAU/HARZ, GERMANY

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 1955

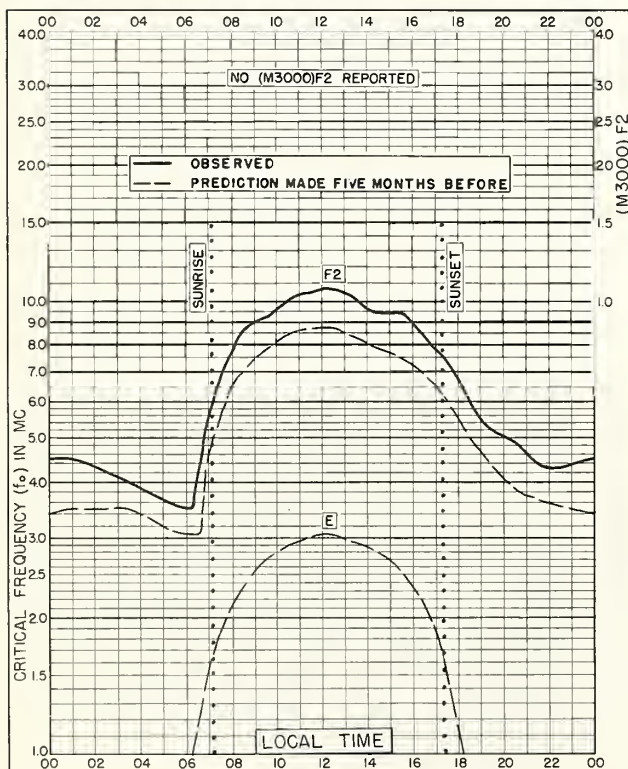


Fig. 59. WAKKANAI, JAPAN
45.4°N, 141.7°E
FEBRUARY 1956

NBS 503

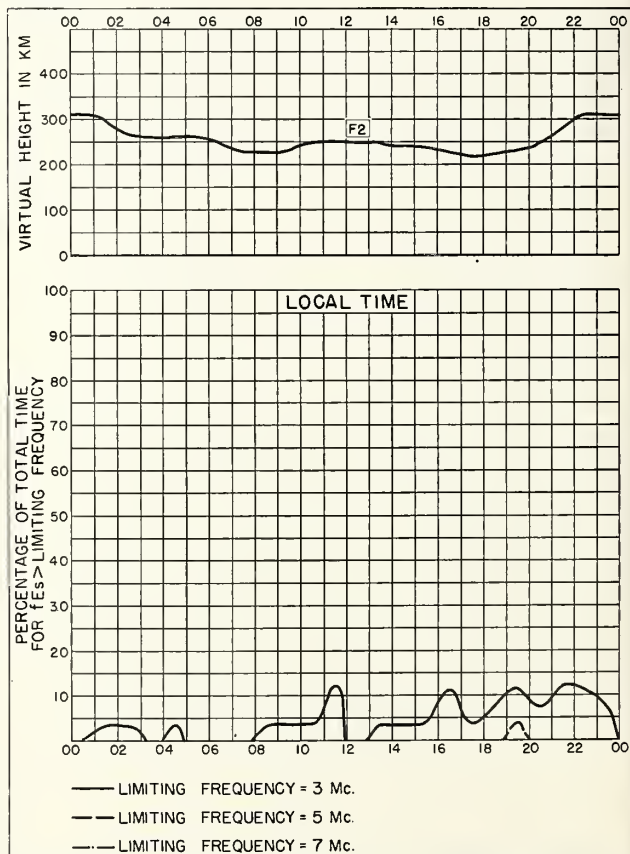


Fig. 60. WAKKANAI, JAPAN

FEBRUARY 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE: 1955

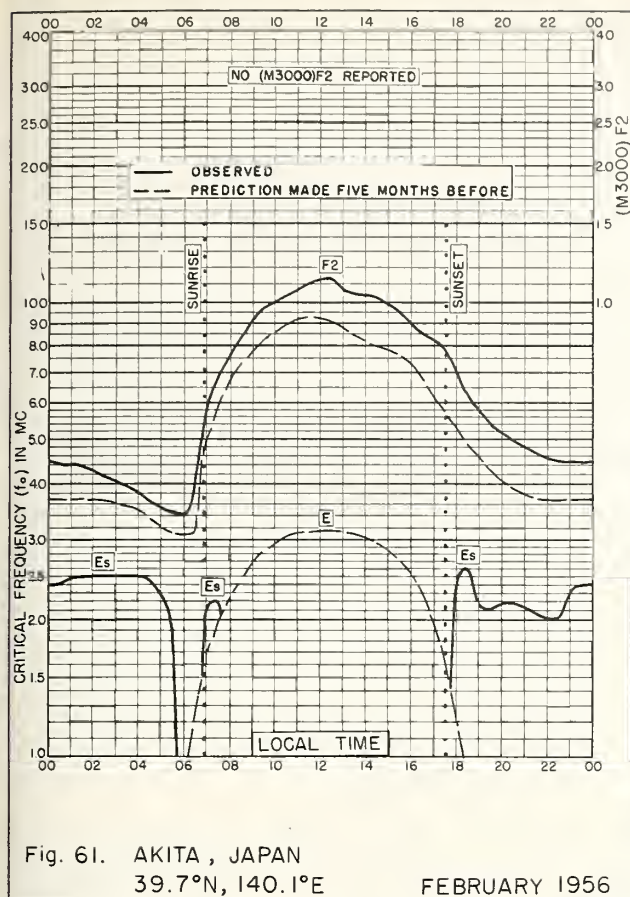


Fig. 61. AKITA, JAPAN
39.7°N, 140.1°E

FEBRUARY 1956

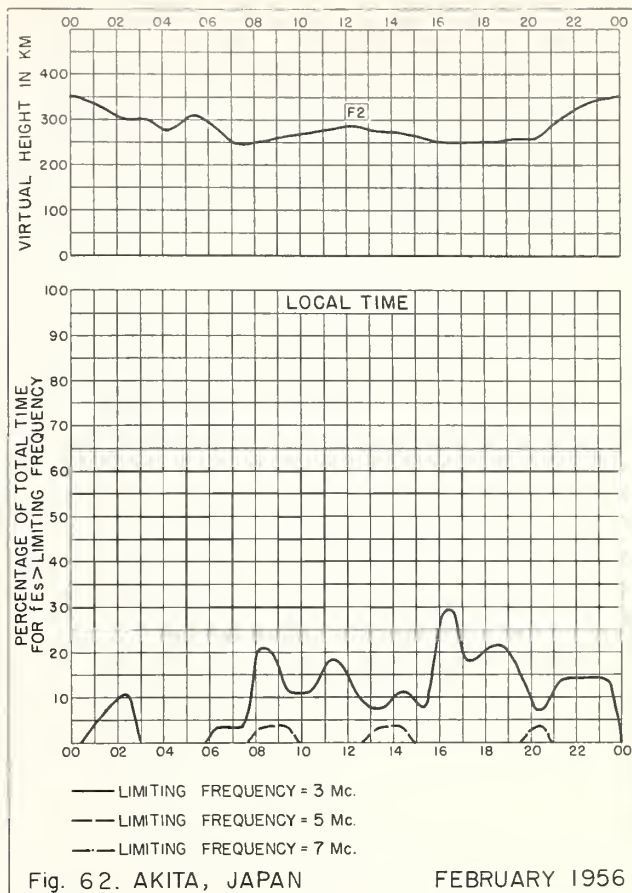


Fig. 62. AKITA, JAPAN

FEBRUARY 1956

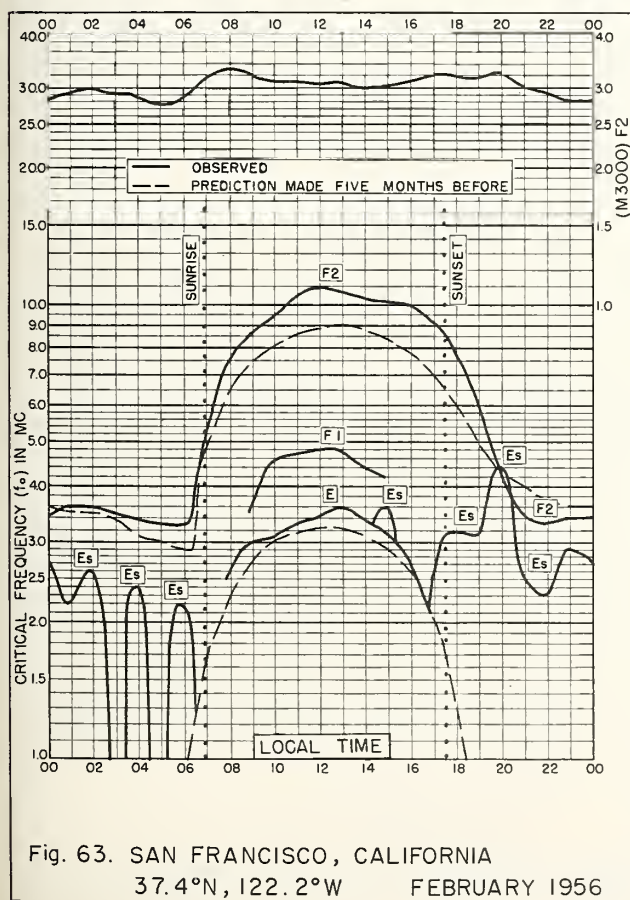


Fig. 63. SAN FRANCISCO, CALIFORNIA

37.4°N, 122.2°W

FEBRUARY 1956

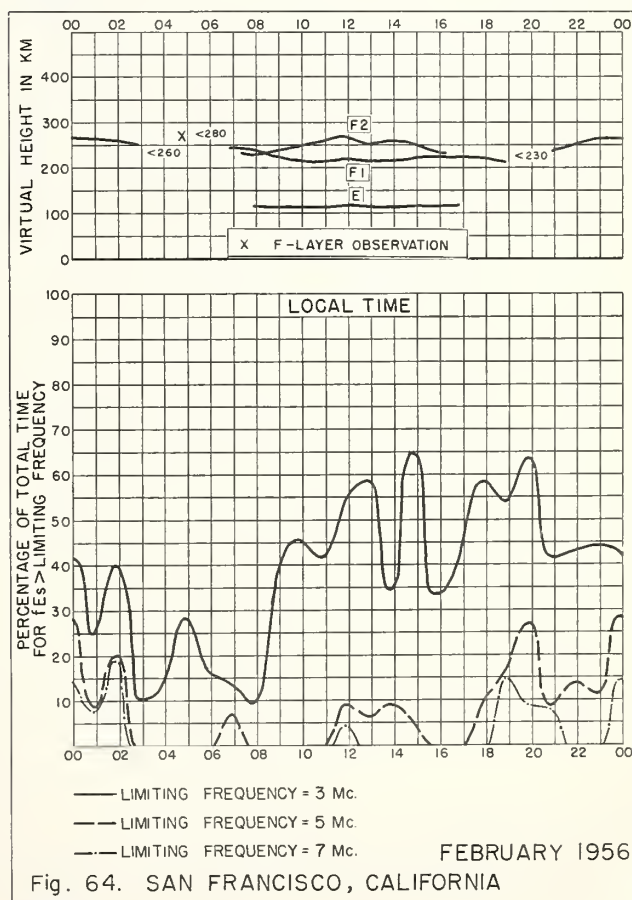


Fig. 64. SAN FRANCISCO, CALIFORNIA

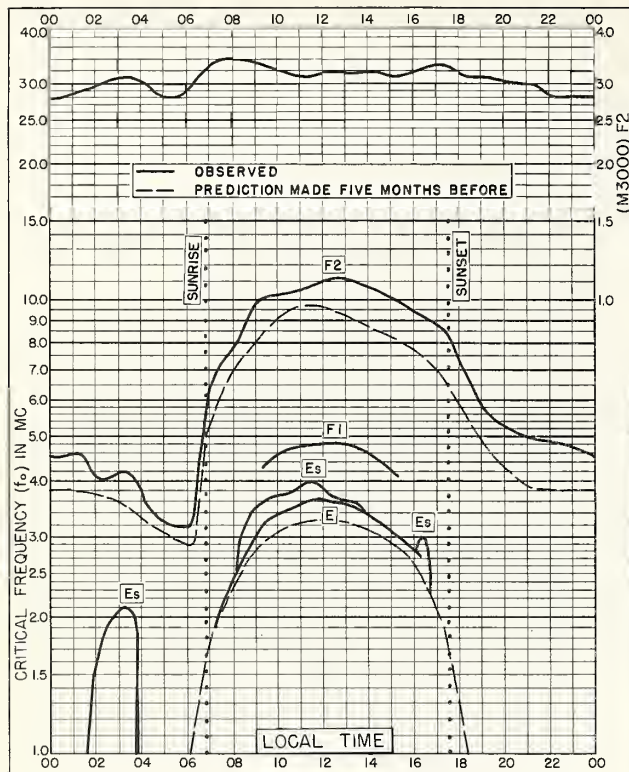


Fig. 65. TOKYO, JAPAN

35.7°N, 139.5°E

FEBRUARY 1956

NBS 503

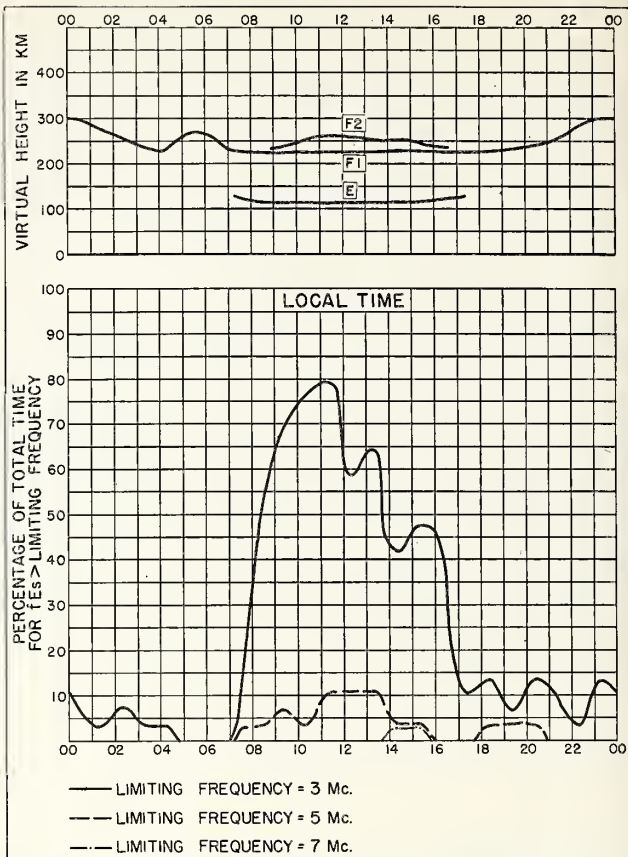


Fig. 66. TOKYO, JAPAN

FEBRUARY 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 248877

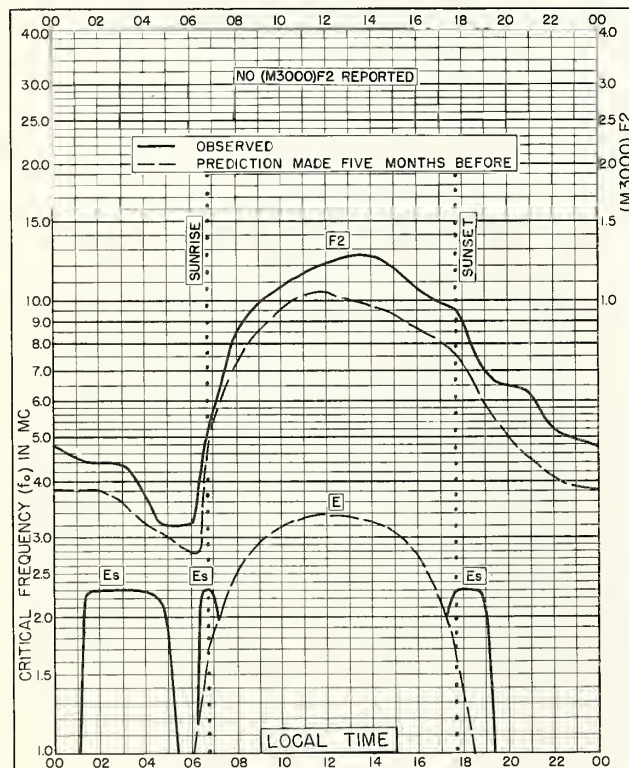


Fig. 67. YAMAGAWA, JAPAN

31.2°N, 130.6°E

FEBRUARY 1956

NBS 503

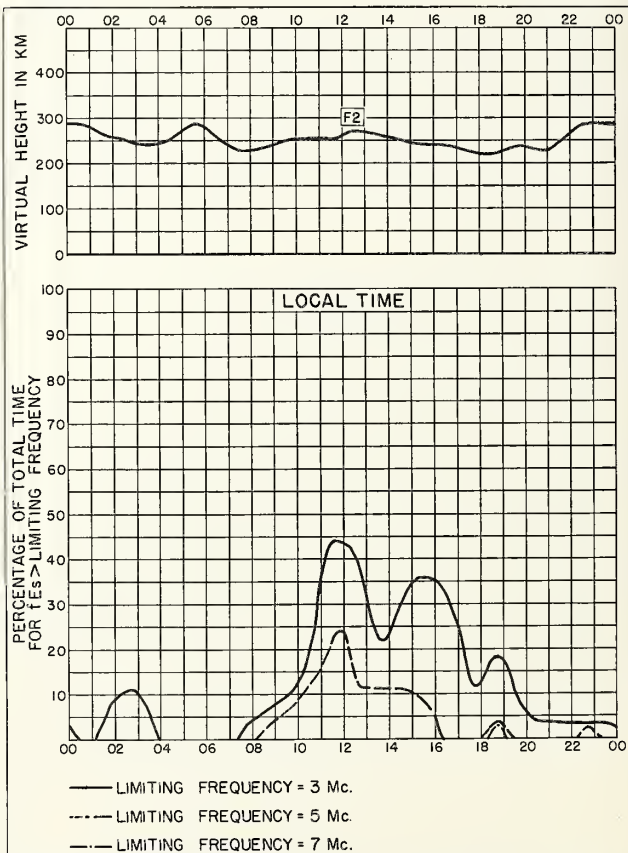


Fig. 68. YAMAGAWA, JAPAN

FEBRUARY 1956

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 248877

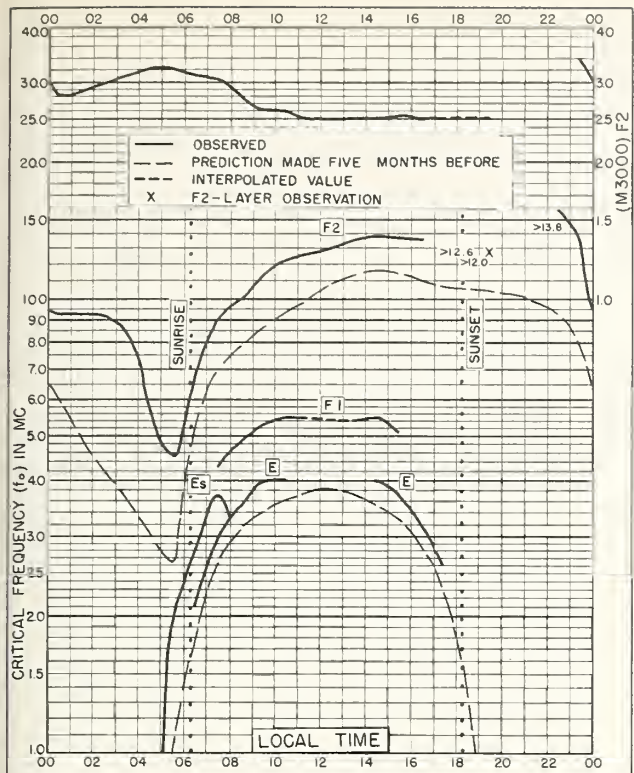


Fig. 69. NAIROBI, KENYA
1.3°S, 36.8°E
FEBRUARY 1956

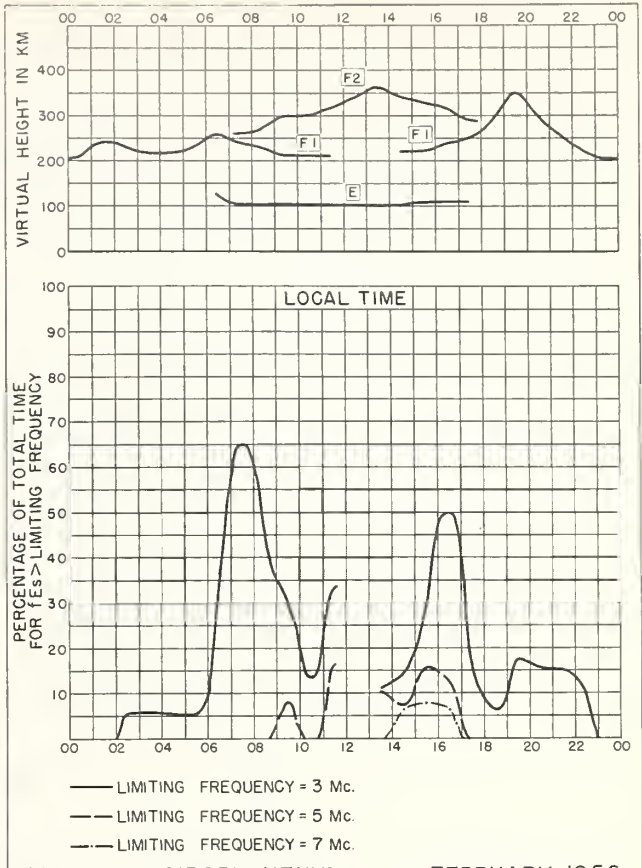


Fig. 70. NAIROBI, KENYA
FEBRUARY 1956

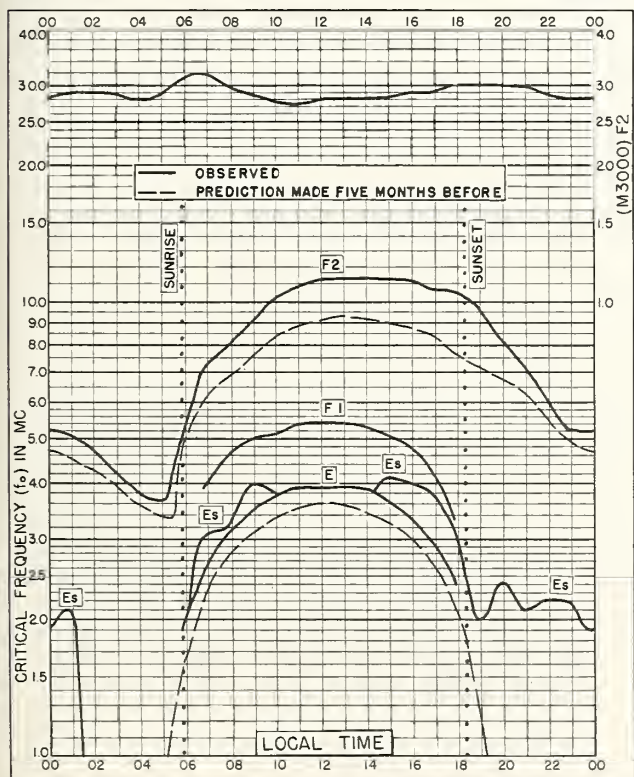


Fig. 71. JOHANNESBURG, UNION OF S. A.
26.2°S, 28.1°E
FEBRUARY 1956

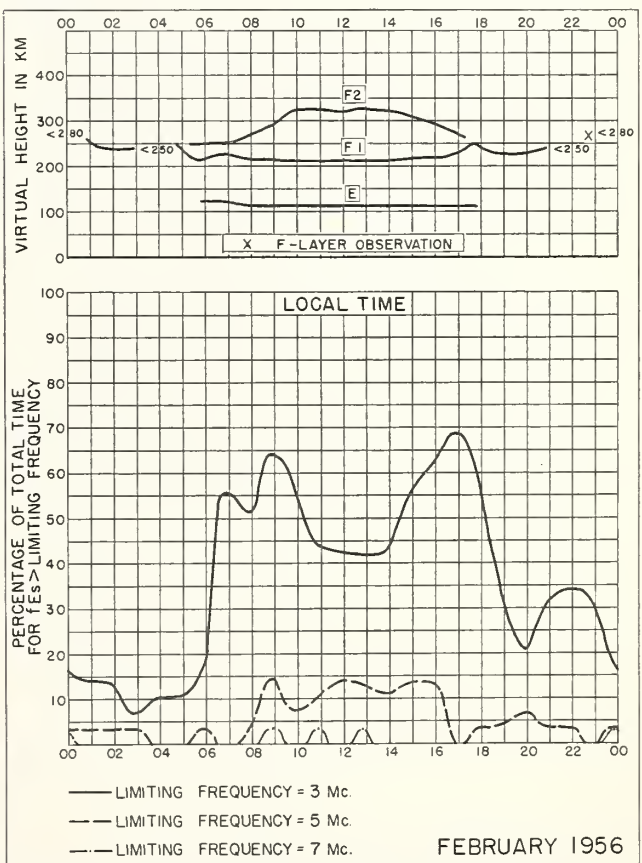


Fig. 72. JOHANNESBURG, UNION OF S. AFRICA
FEBRUARY 1956

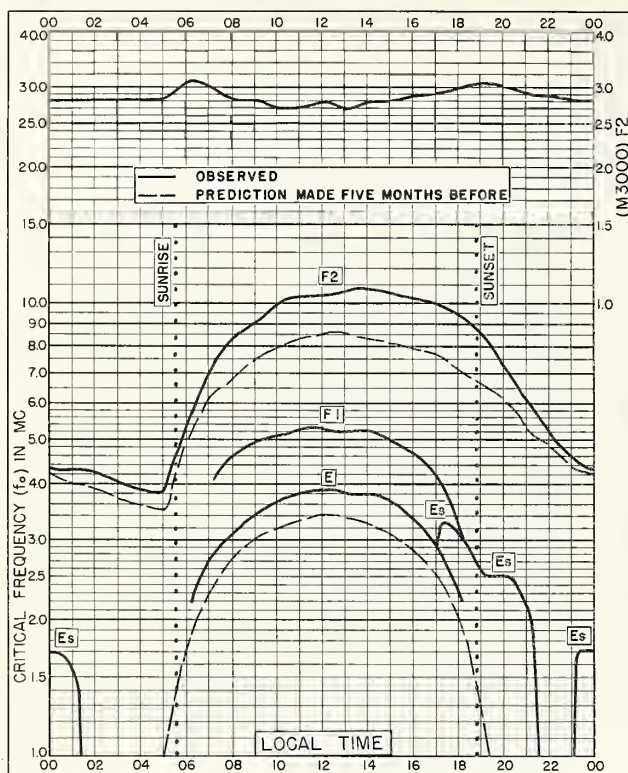


Fig. 73. CAPETOWN, UNION OF S. AFRICA
34.2°S, 18.3°E
FEBRUARY 1956

NBS 503

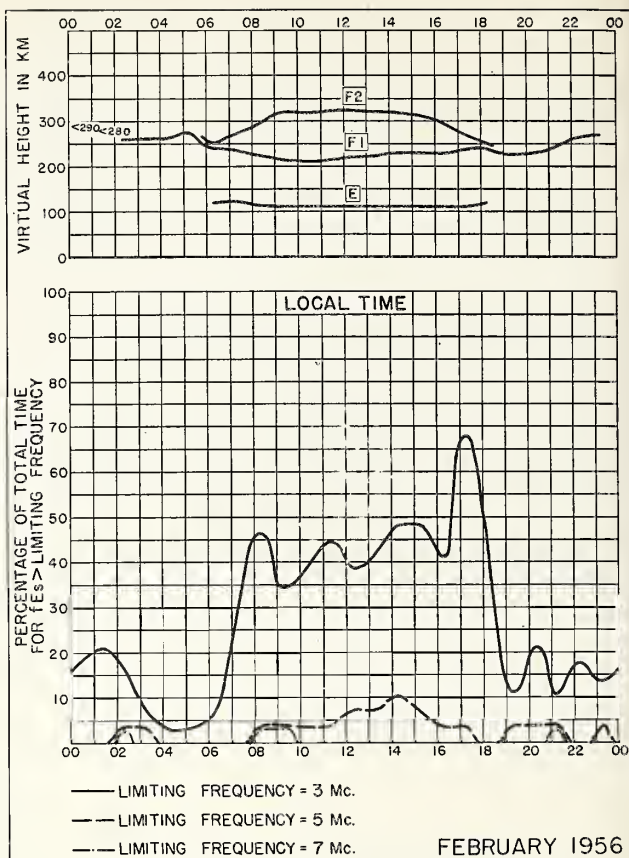


Fig. 74. CAPETOWN, UNION OF S. AFRICA
FEBRUARY 1956

NBS 490

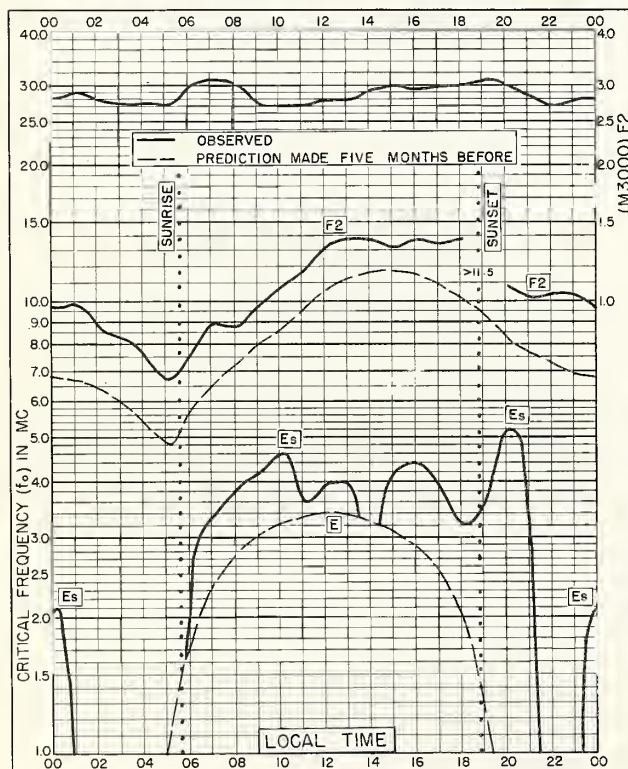


Fig. 75. BUENOS AIRES, ARGENTINA
34.5°S, 58.5°W
FEBRUARY 1956

NBS 503

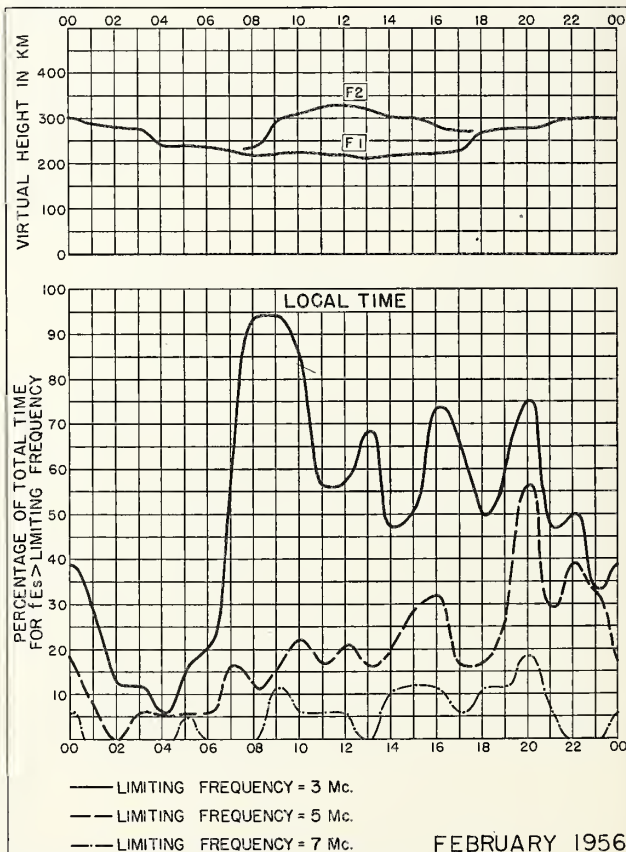


Fig. 76. BUENOS AIRES, ARGENTINA
FEBRUARY 1956

NES 490

N. S. INTERNATIONAL PHYSICAL OFFICE 12/5577

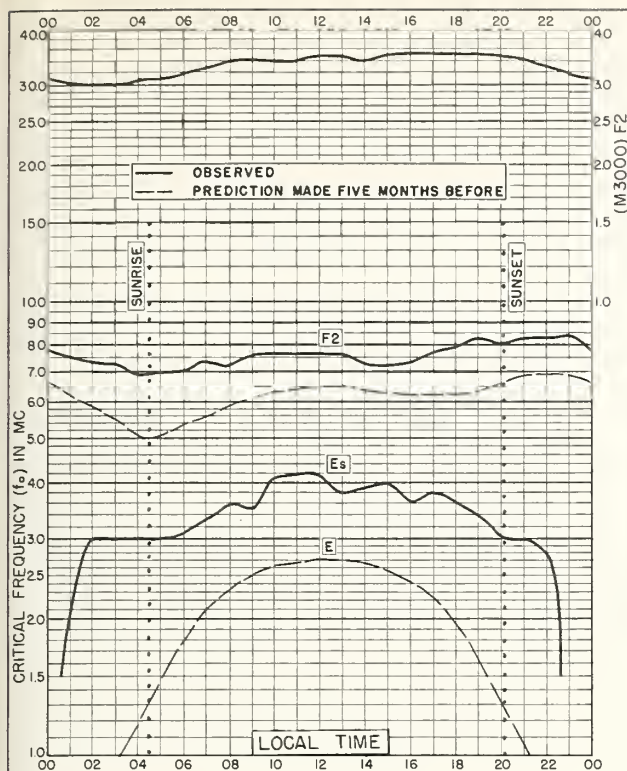


Fig. 77. DECEPCION I.
63.0°S, 60.7°W

FEBRUARY 1956

NBS 503

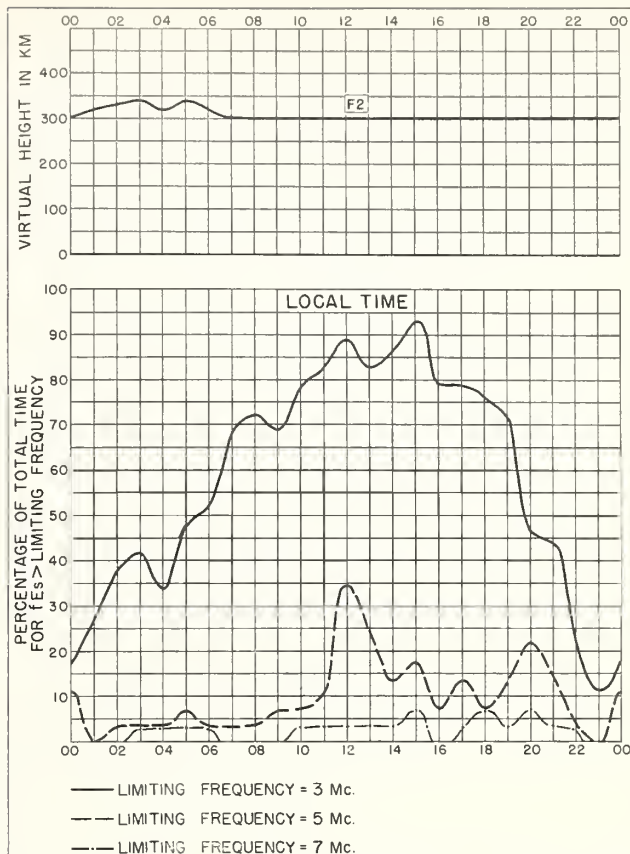


Fig. 78. DECEPCION I.

FEBRUARY 1956

NBS 490

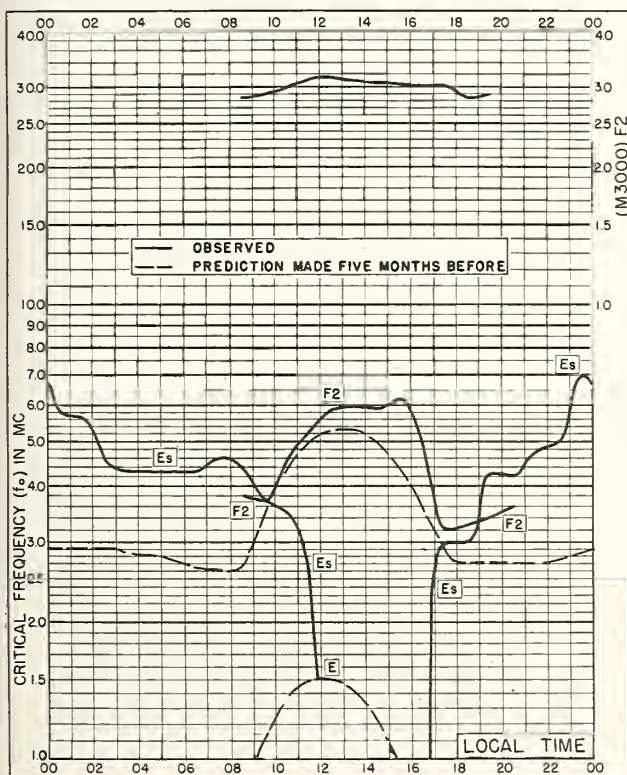


Fig. 79. POINT BARROW, ALASKA
71.3°N, 156.8°W

JANUARY 1956

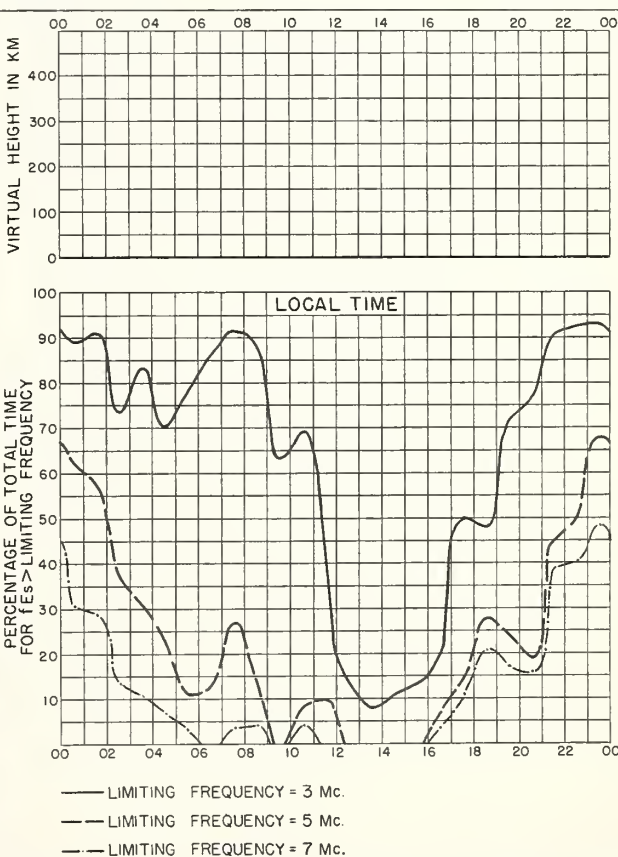


Fig. 80. POINT BARROW, ALASKA

JANUARY 1956

NBS 490

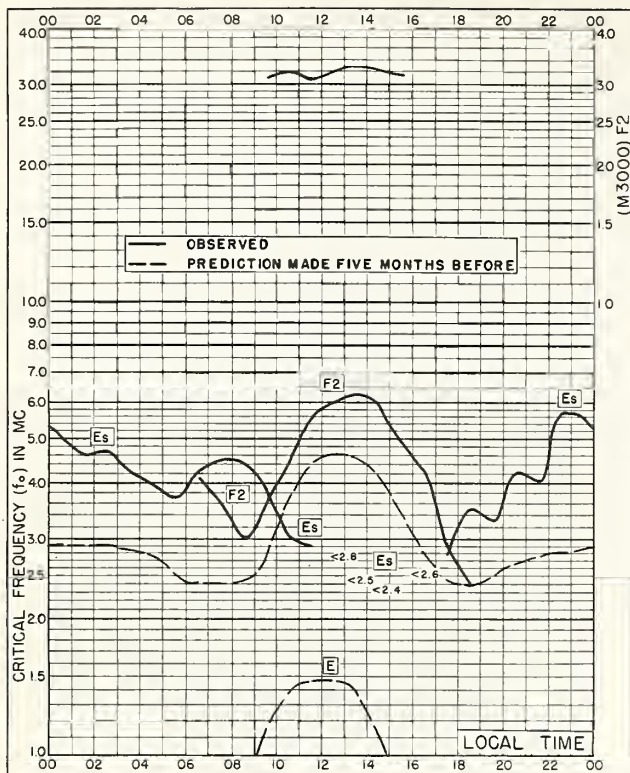


Fig. 81. POINT BARROW, ALASKA
71.3°N, 156.8°W DECEMBER 1955

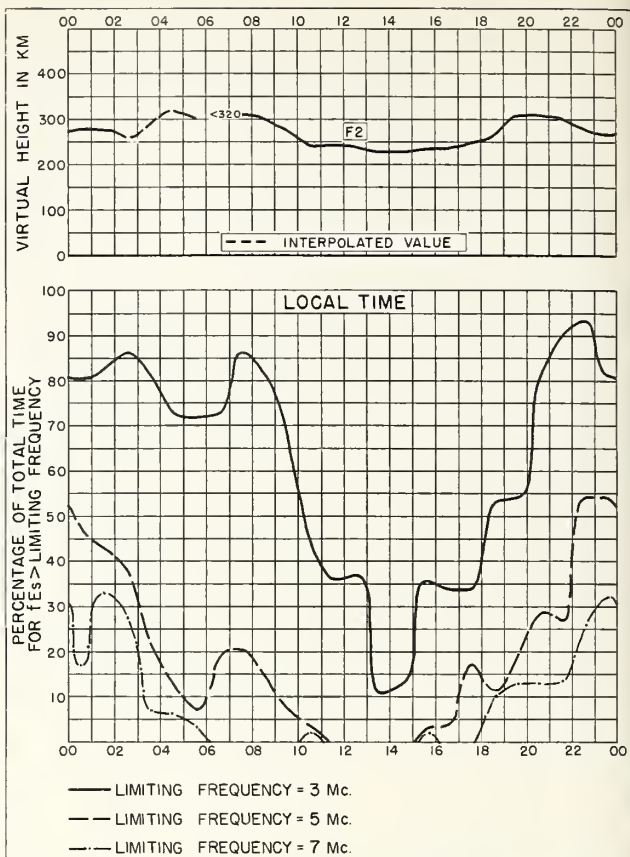


Fig. 82. POINT BARROW, ALASKA DECEMBER 1955

NBS 490

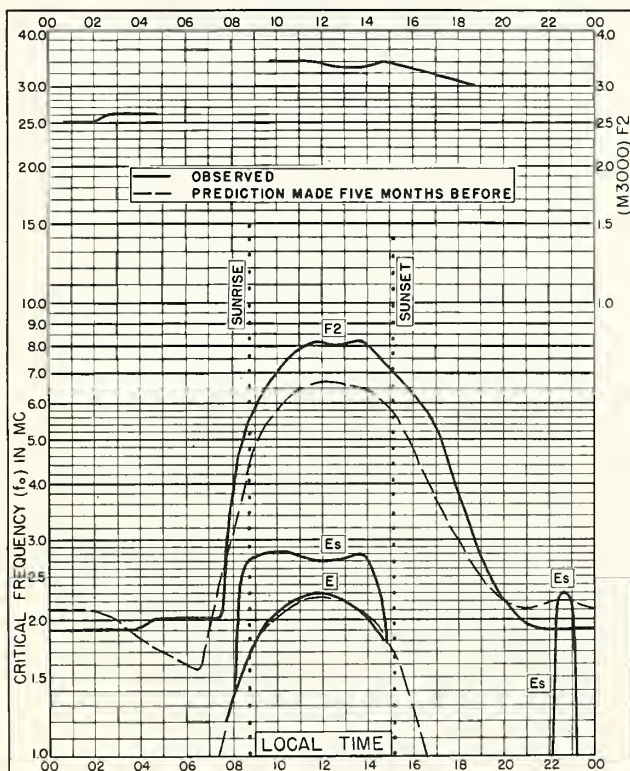


Fig. 83. INVERNESS, SCOTLAND
57.4°N, 4.2°W DECEMBER 1955

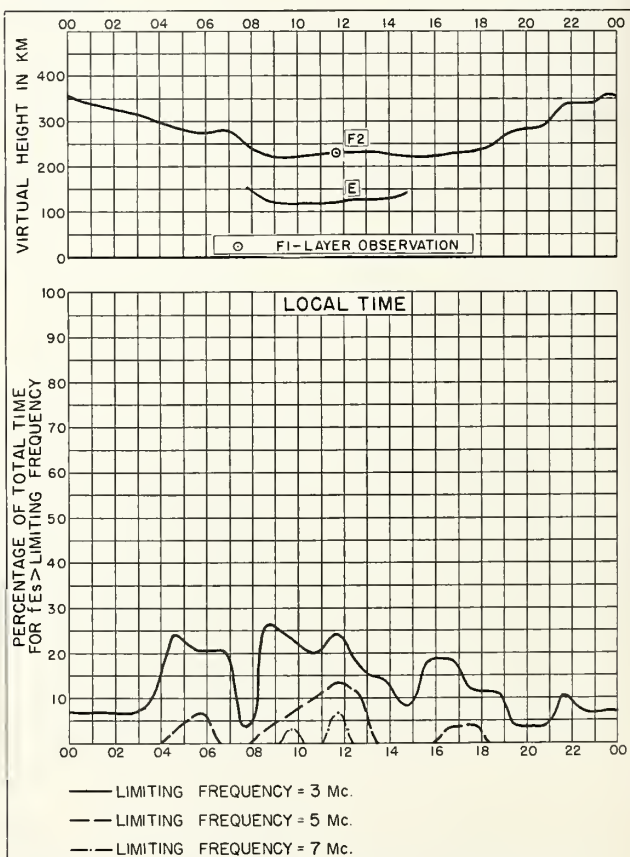


Fig. 84. INVERNESS, SCOTLAND DECEMBER 1955

NBS 490

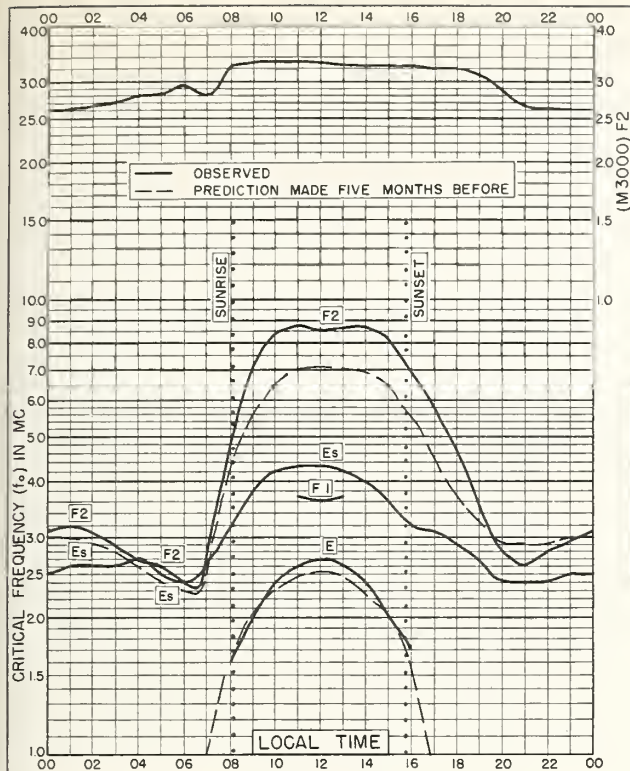


Fig. 85. SLOUGH, ENGLAND
51.5°N, 0.6°W
DECEMBER 1955

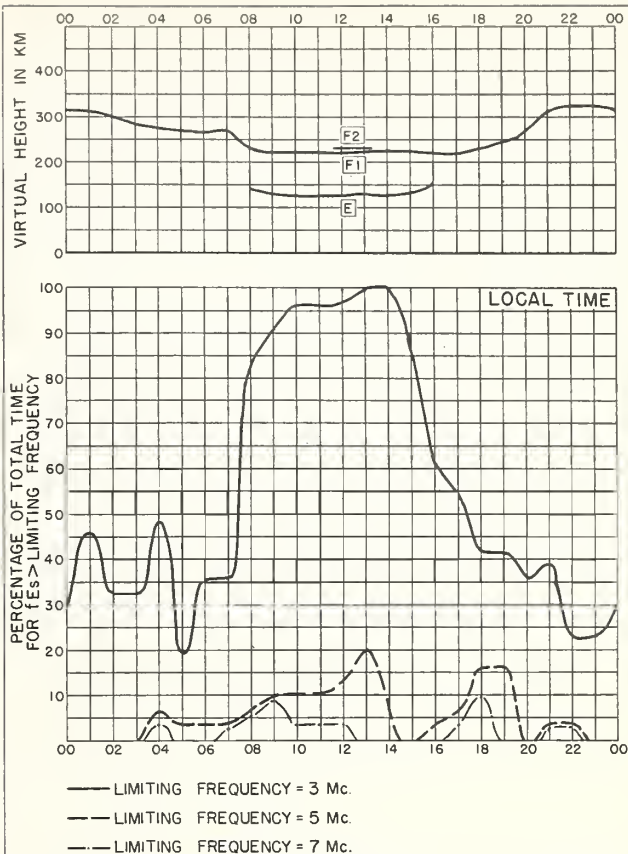


Fig. 86. SLOUGH, ENGLAND
DECEMBER 1955

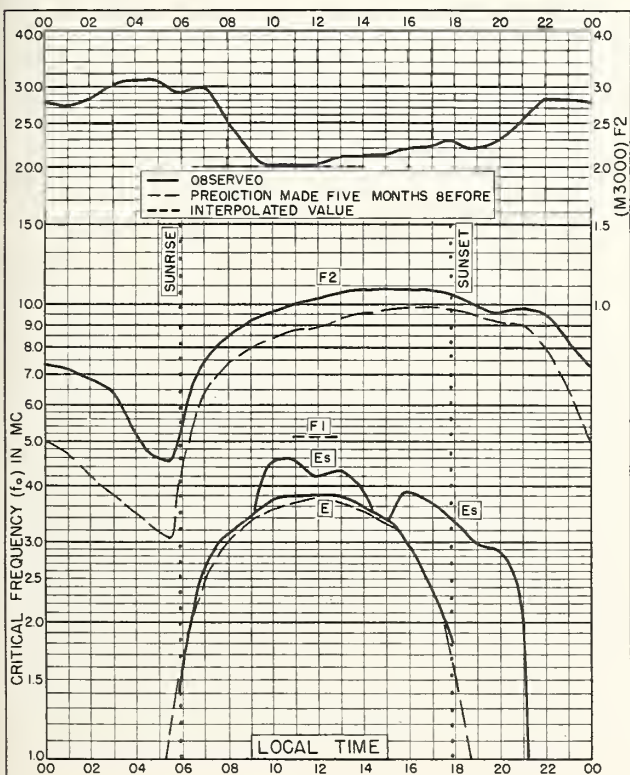


Fig. 87. SINGAPORE, BRITISH MALAYA
1.3°N, 103.8°E
DECEMBER 1955

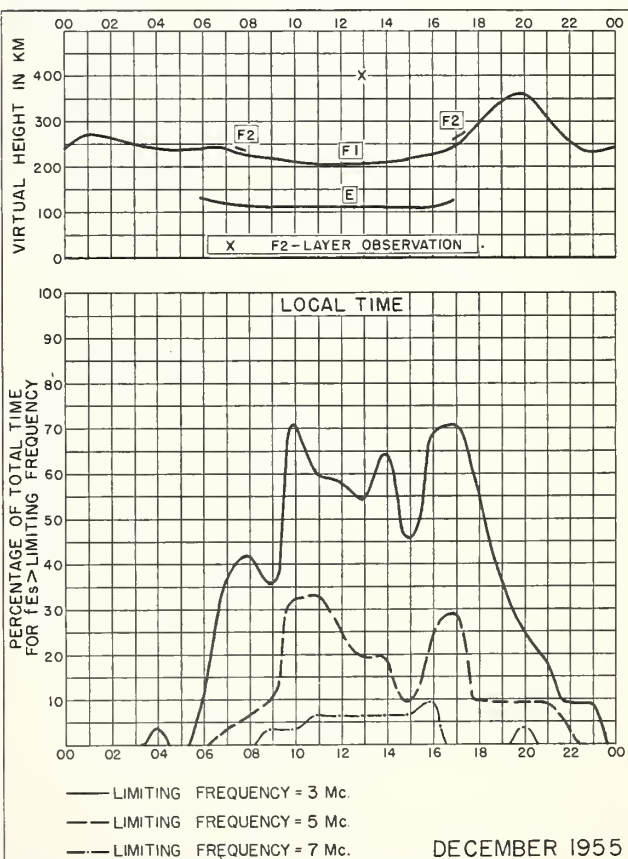


Fig. 88. SINGAPORE, BRITISH MALAYA
DECEMBER 1955

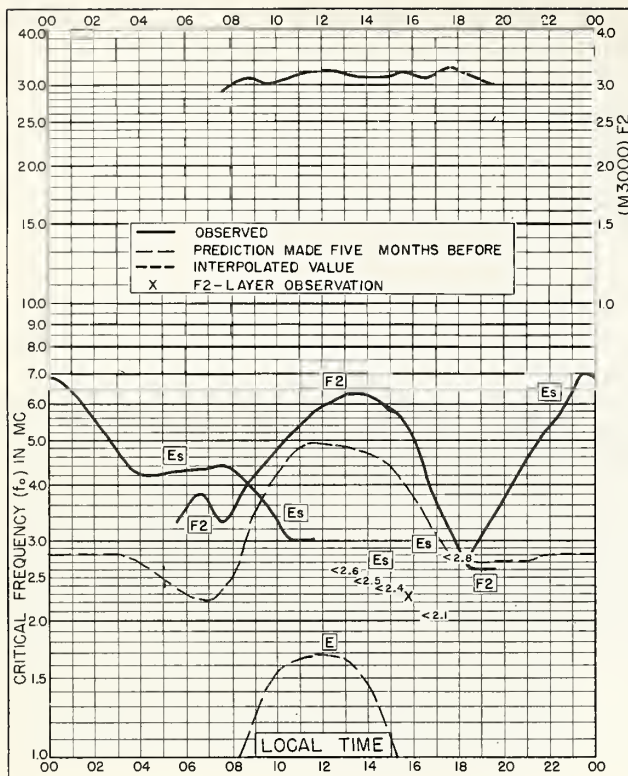


Fig. 89. POINT BARROW, ALASKA
71.3°N, 156.8°W NOVEMBER 1955

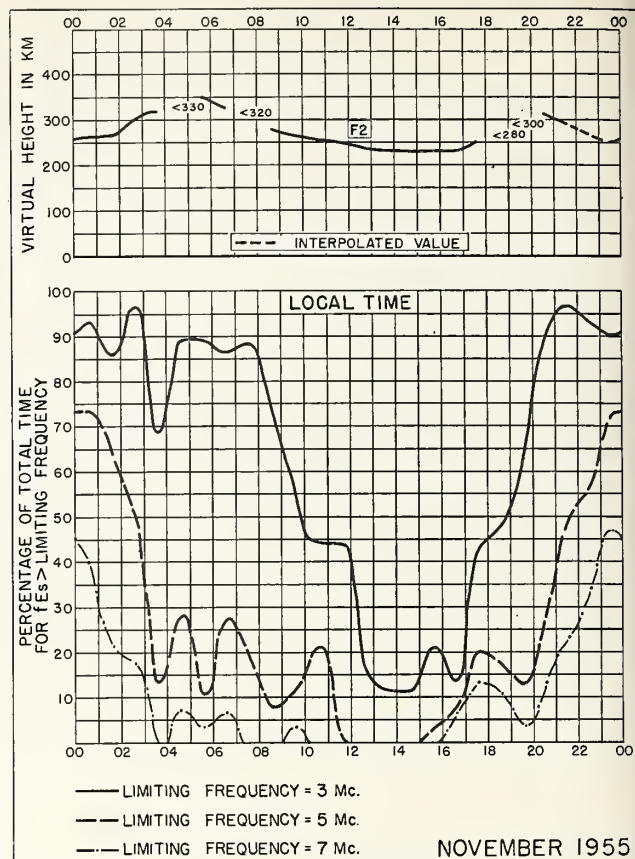


Fig. 90. POINT BARROW, ALASKA
NOVEMBER 1955

NBS 490

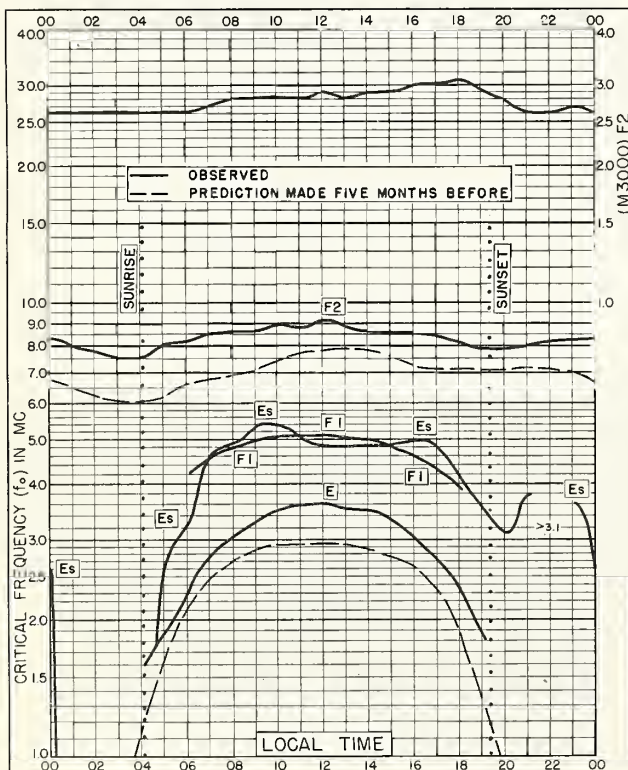


Fig. 91. FALKLAND IS.
51.7°S, 57.8°W NOVEMBER 1955

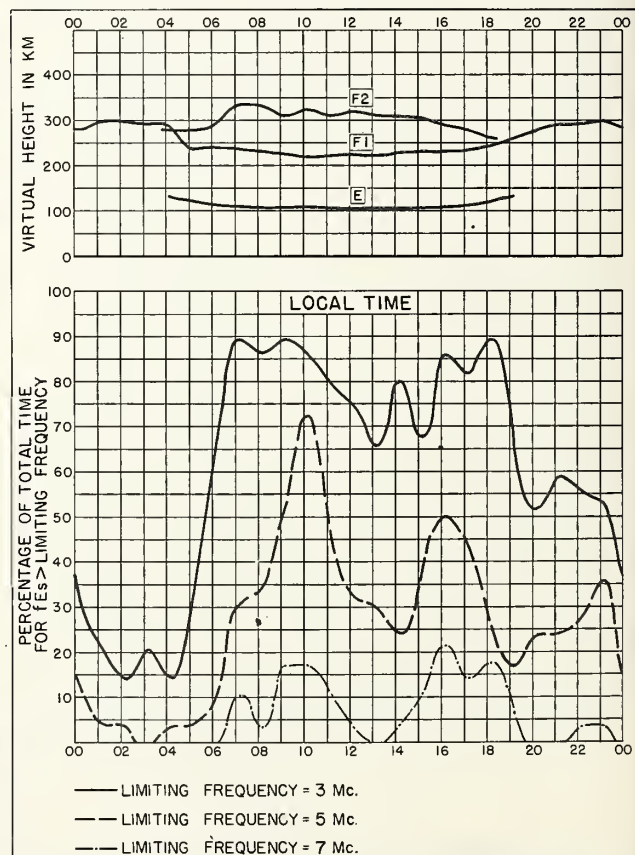


Fig. 92. FALKLAND IS.
NOVEMBER 1955

NBS 490

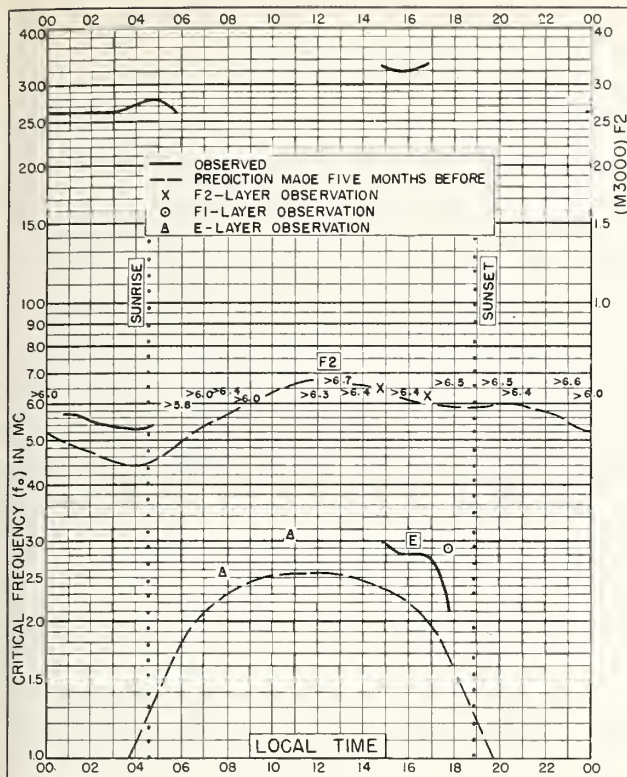


Fig. 93. PORT LOCKROY
64.8°S, 63.5°W

OCTOBER 1955

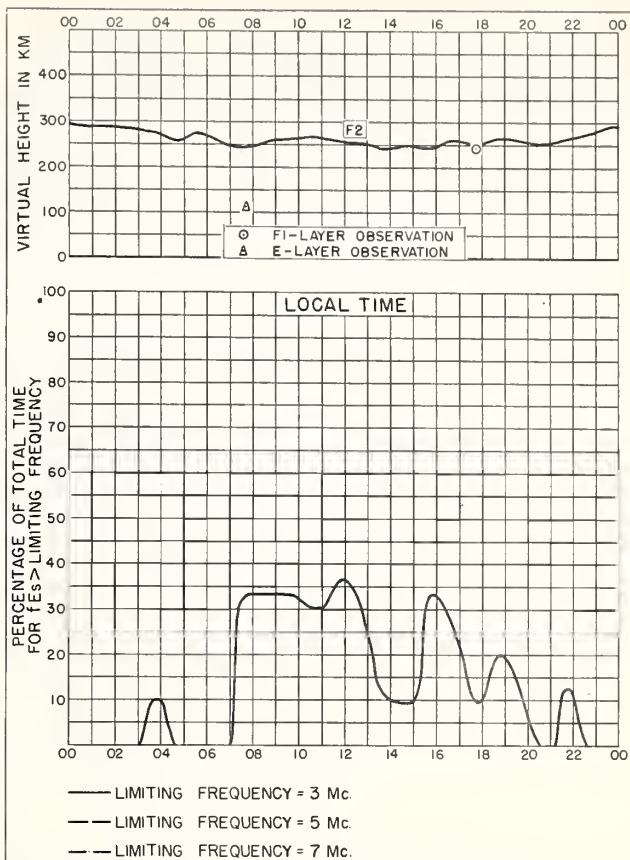


Fig. 94. PORT LOCKROY

OCTOBER 1955

NBS 490

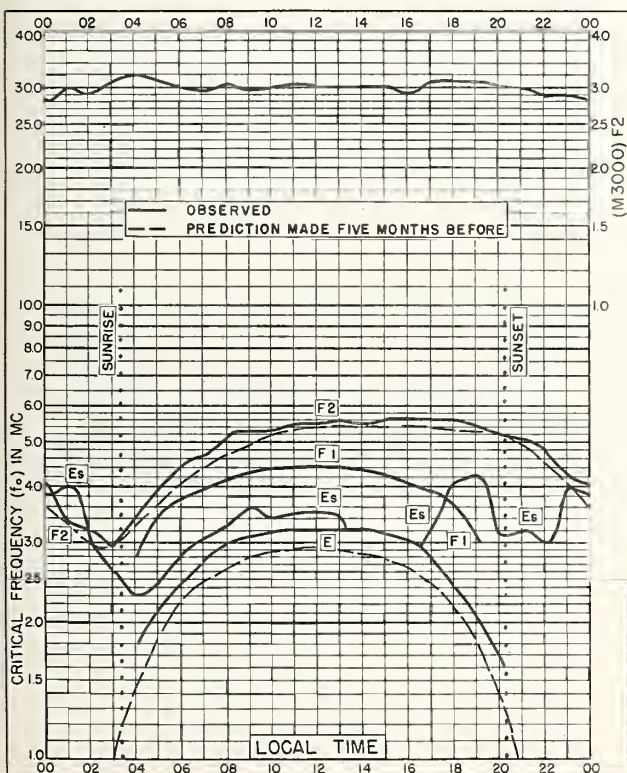


Fig. 95. MACQUARIE I.
54.5°S, 159.0°E

DECEMBER 1954

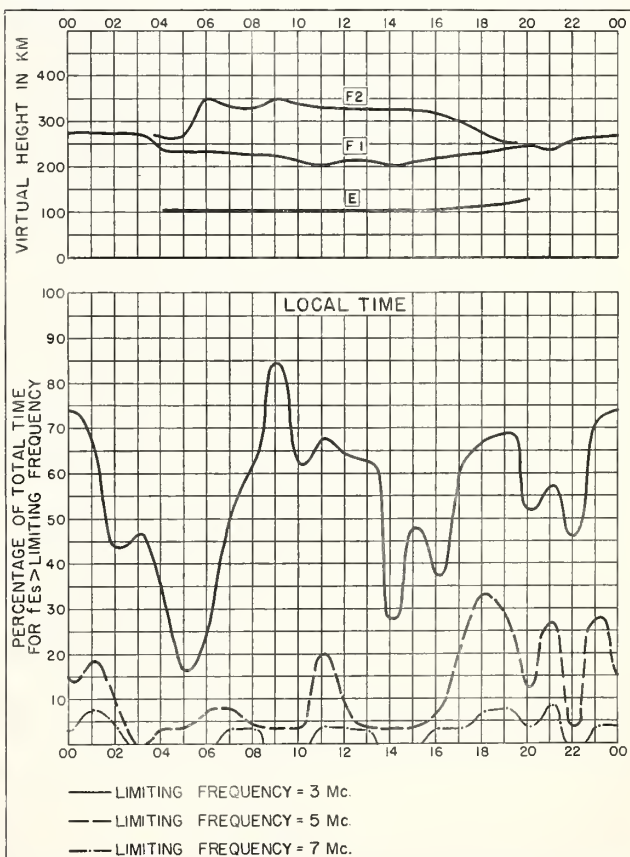


Fig. 96. MACQUARIE I.

DECEMBER 1954

NBS 490

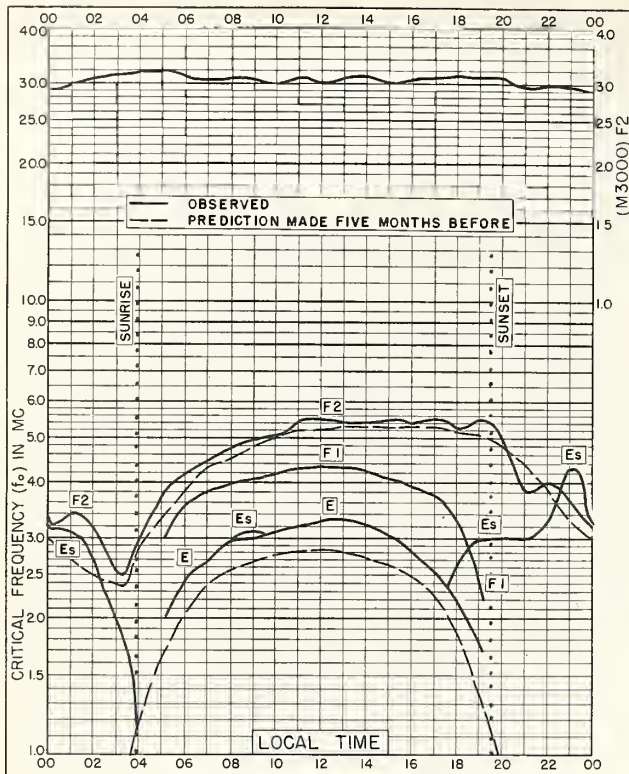


Fig. 97. MACQUARIE I.

54.5°S, 159.0°E

NOVEMBER 1954

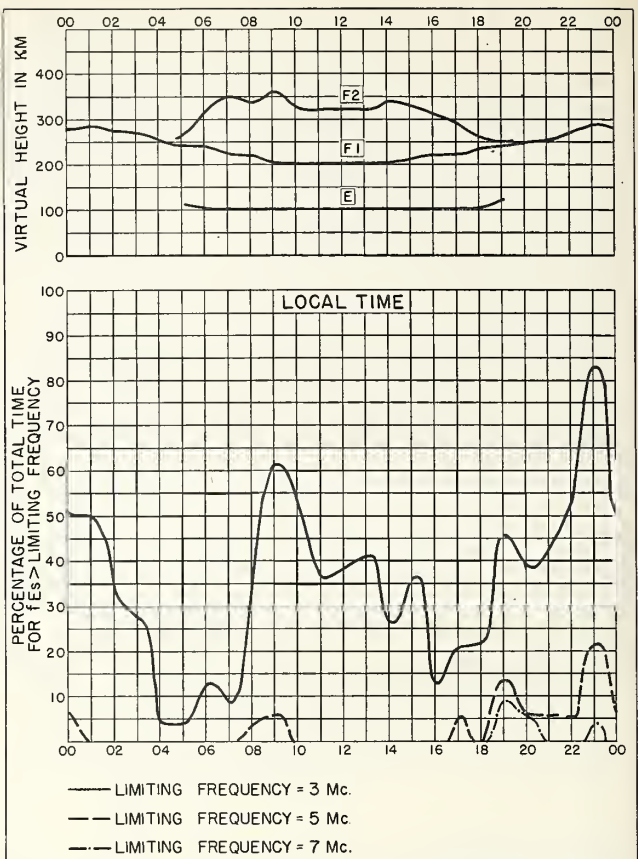


Fig. 98. MACQUARIE I.

NOVEMBER 1954

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 16-5877

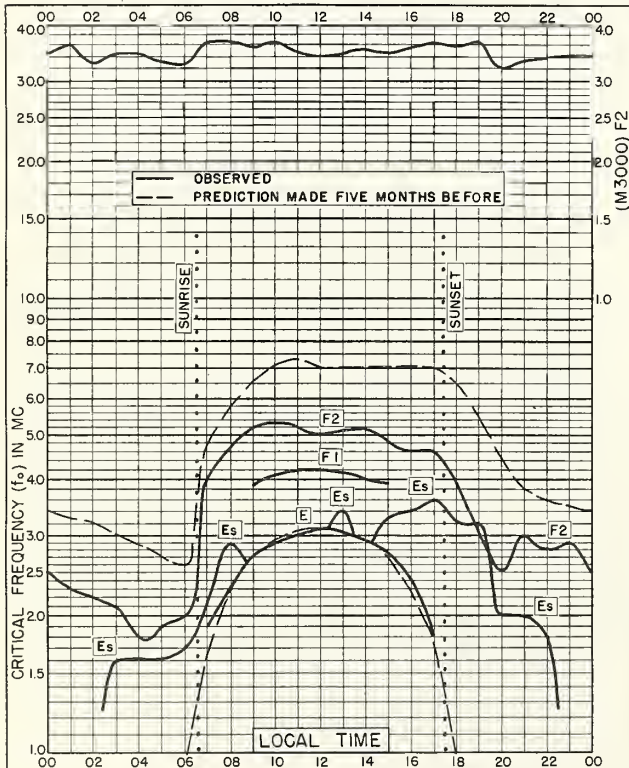


Fig. 99. TANANARIVE, MADAGASCAR

18.8°S, 47.8°E

JUNE 1954

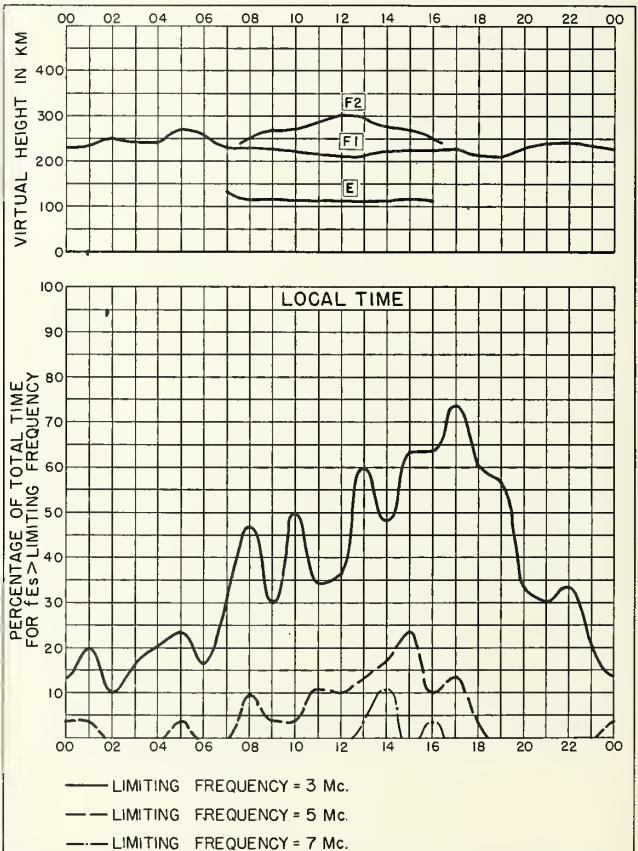


Fig. 100. TANANARIVE, MADAGASCAR

JUNE 1954

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 16-5877

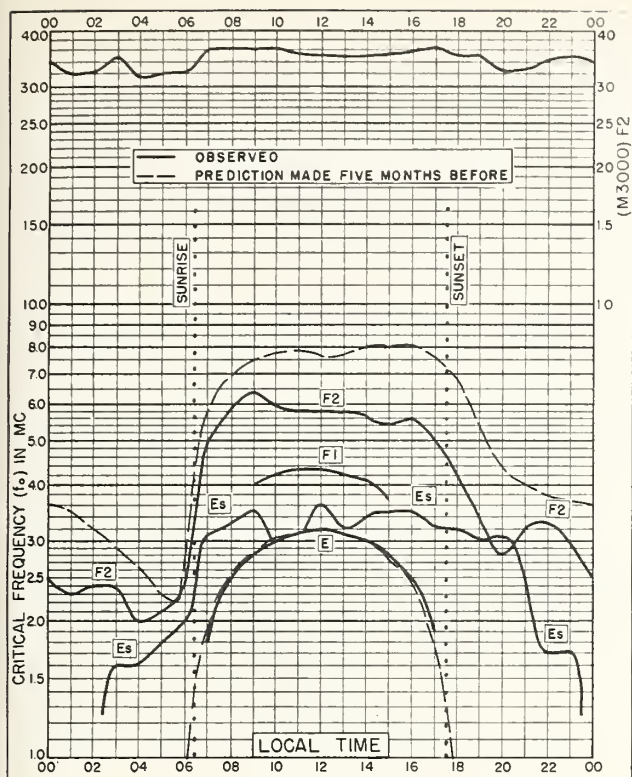


Fig. 101. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E

MAY 1954

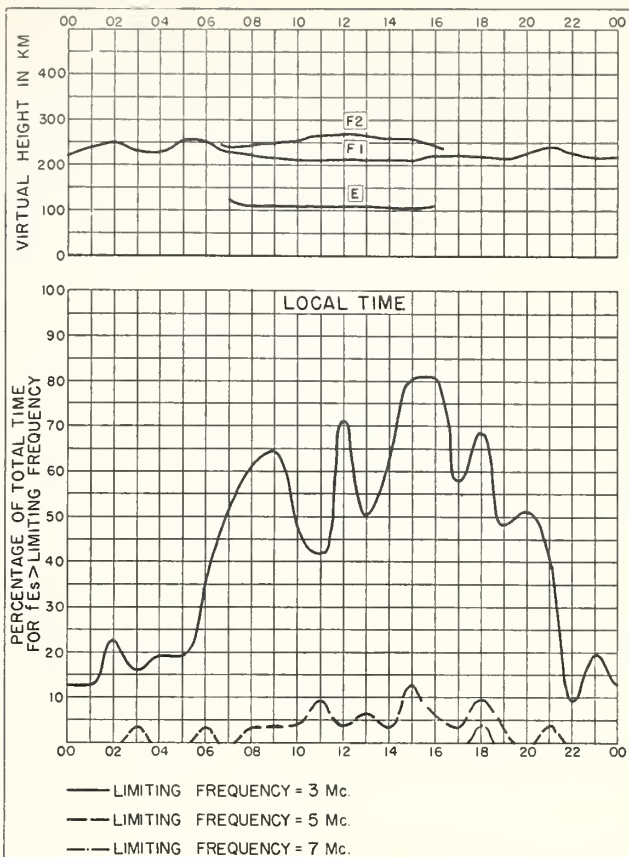


Fig. 102. TANANARIVE, MADAGASCAR

MAY 1954

NBS 490

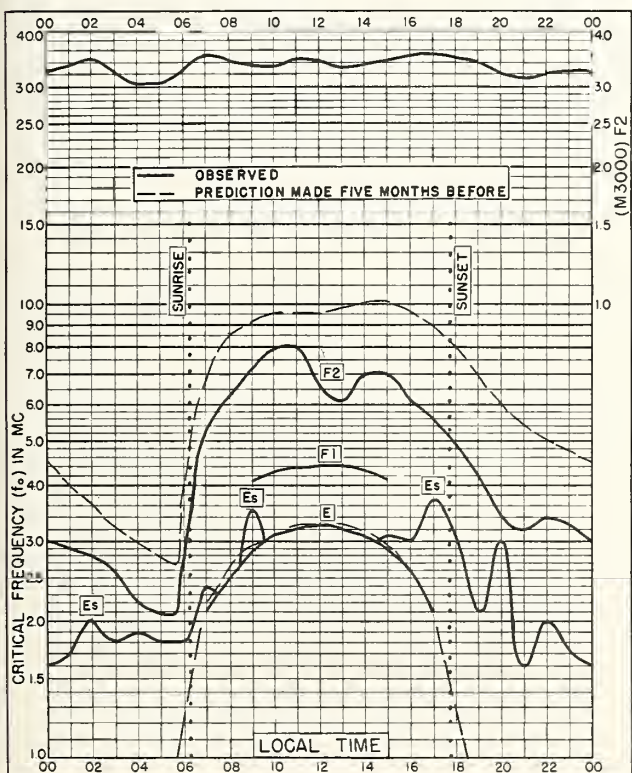


Fig. 103. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E

APRIL 1954

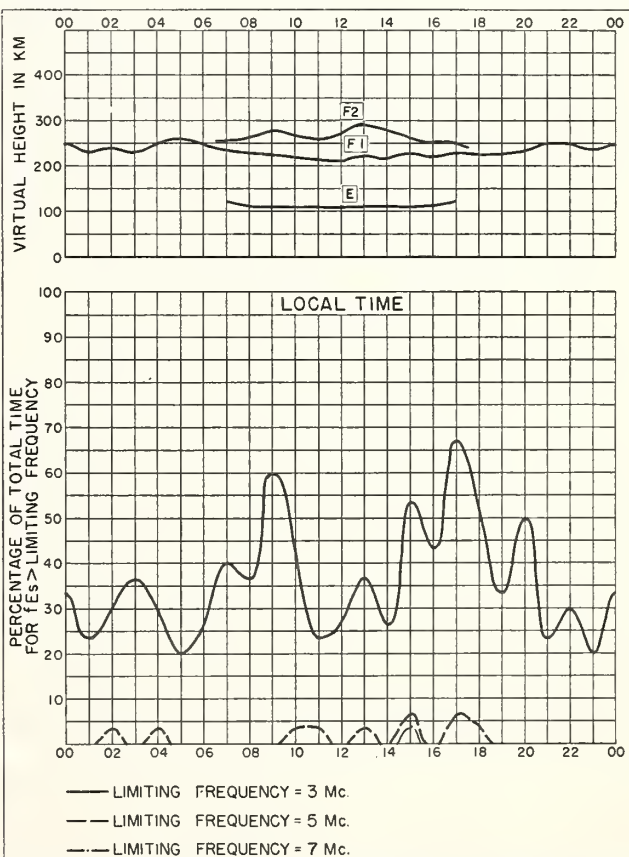


Fig. 104. TANANARIVE, MADAGASCAR

APRIL 1954

NBS 490

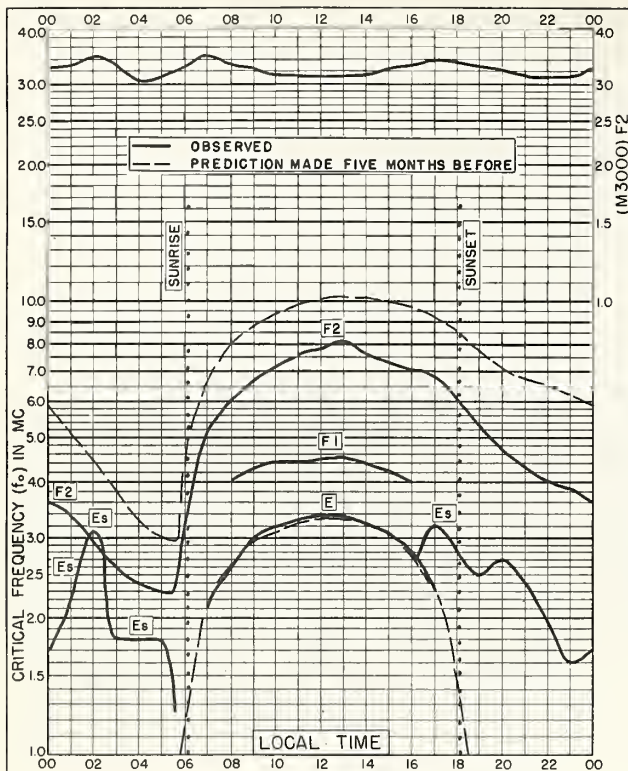


Fig. 105. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E MARCH 1954

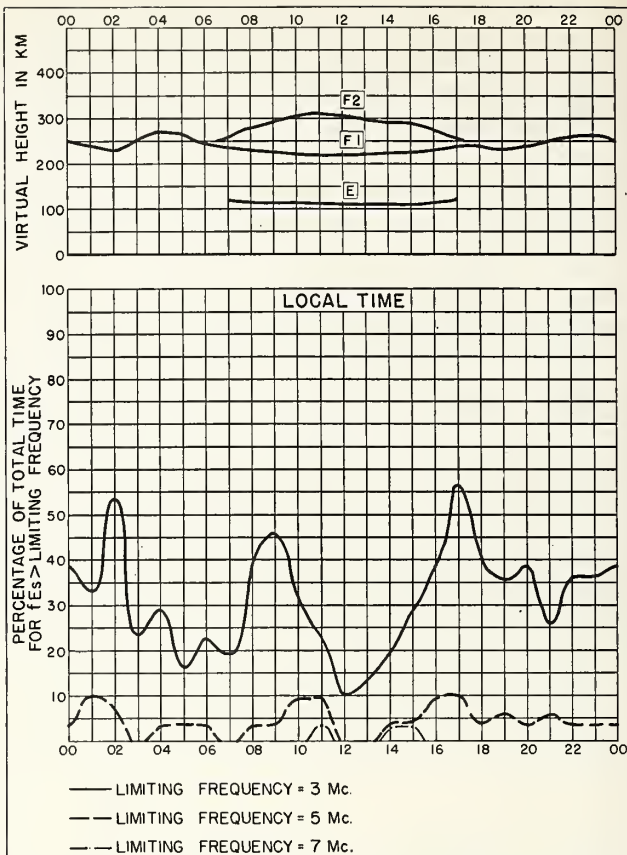


Fig. 106. TANANARIVE, MADAGASCAR MARCH 1954

NBS 490

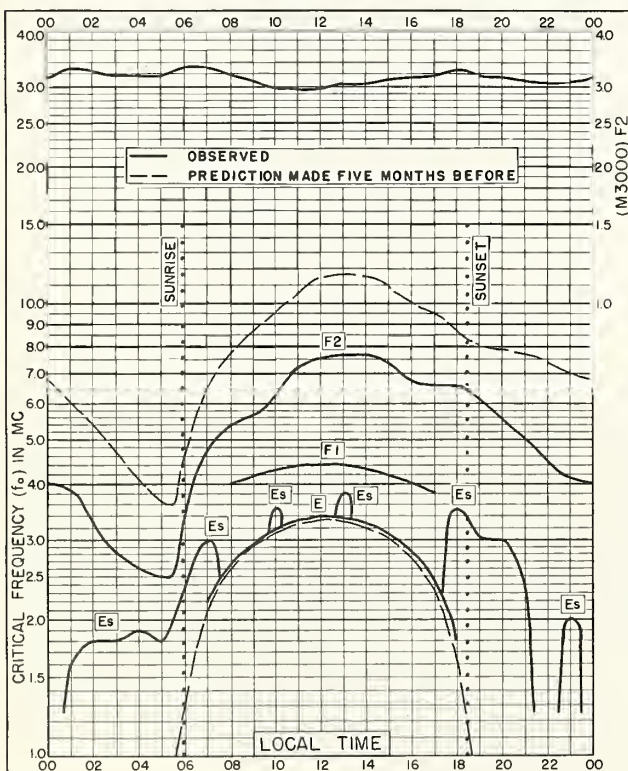


Fig. 107. TANANARIVE, MADAGASCAR
18.8°S, 47.8°E FEBRUARY 1954

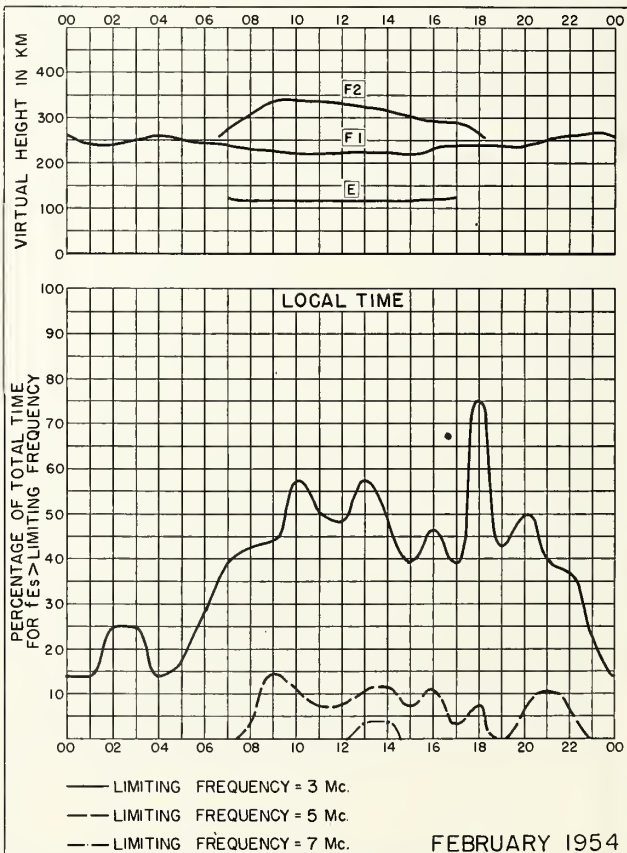
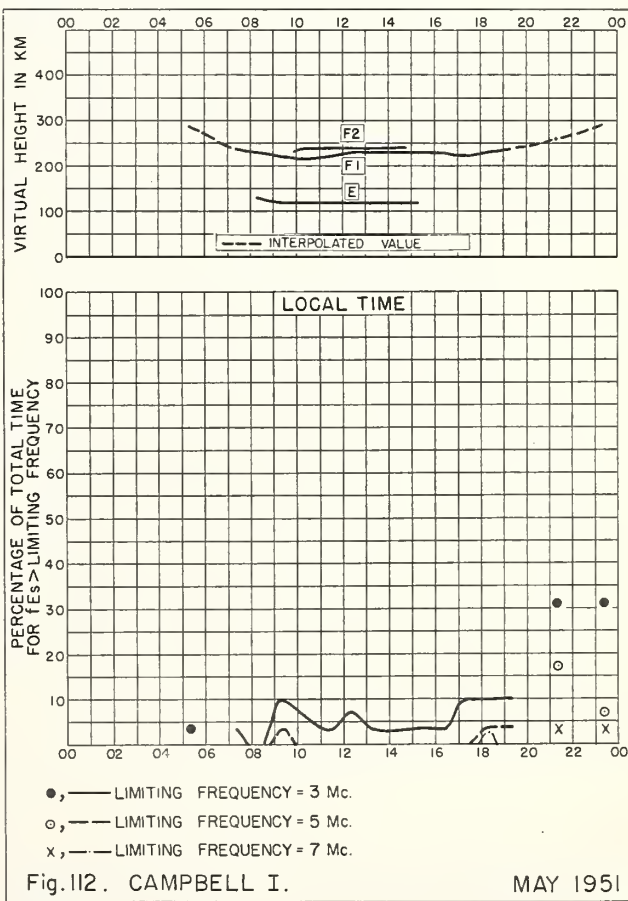
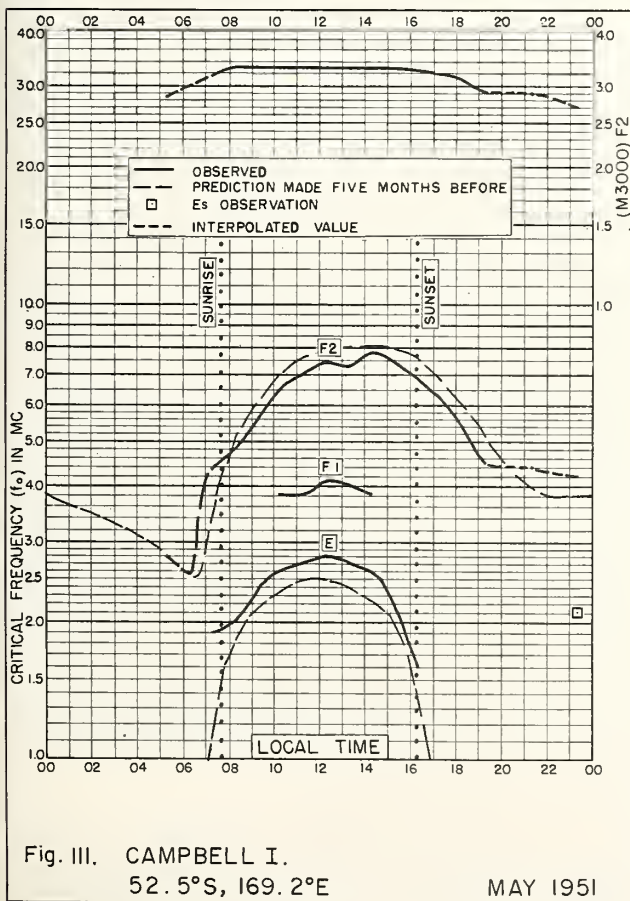
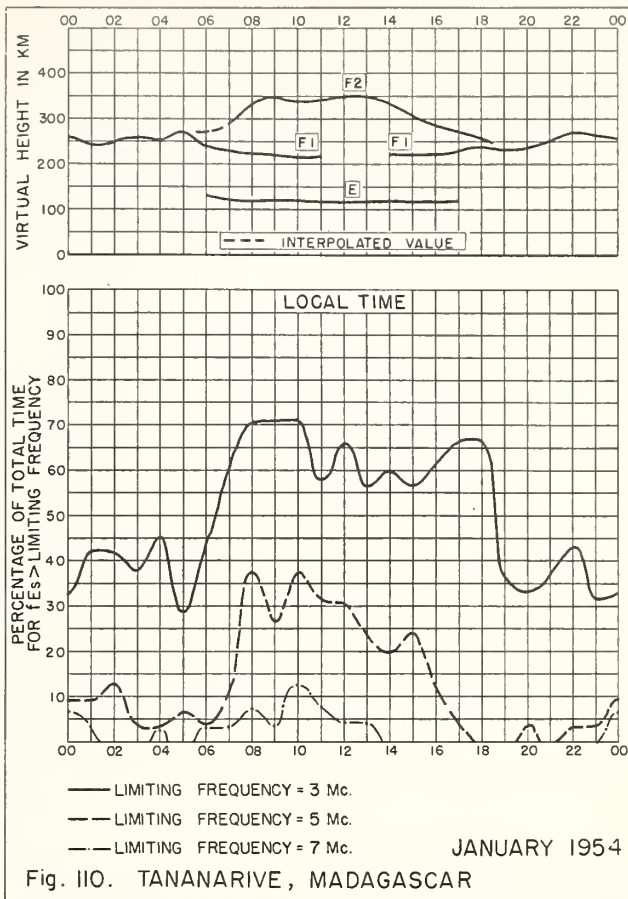
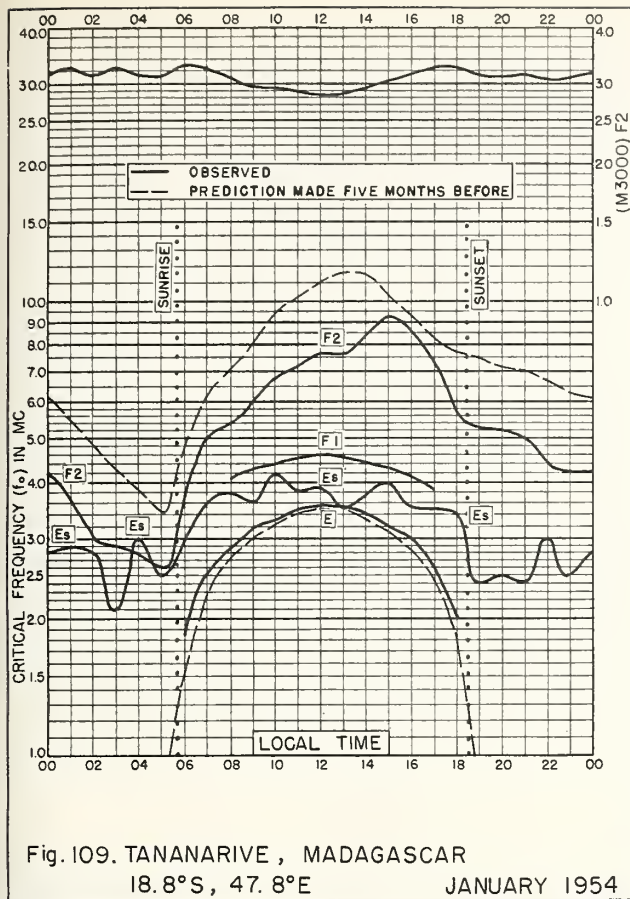


Fig. 108. TANANARIVE, MADAGASCAR

FEBRUARY 1954

NBS 490

U. S. GOVERNMENT PRINTING OFFICE 315877



NBS 490

N. S. INTERNATIONAL PRACTICE OFFICE 11/5/57

NBS 490

N. S. INTERNATIONAL PRACTICE OFFICE 11/5/57

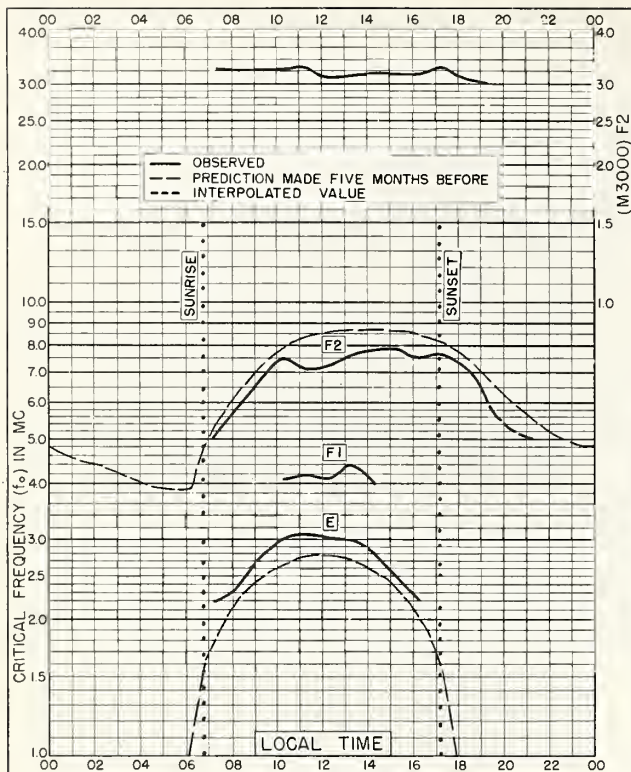


Fig. 113. CAMPBELL I.

52.5°S, 169.2°E

APRIL 1951

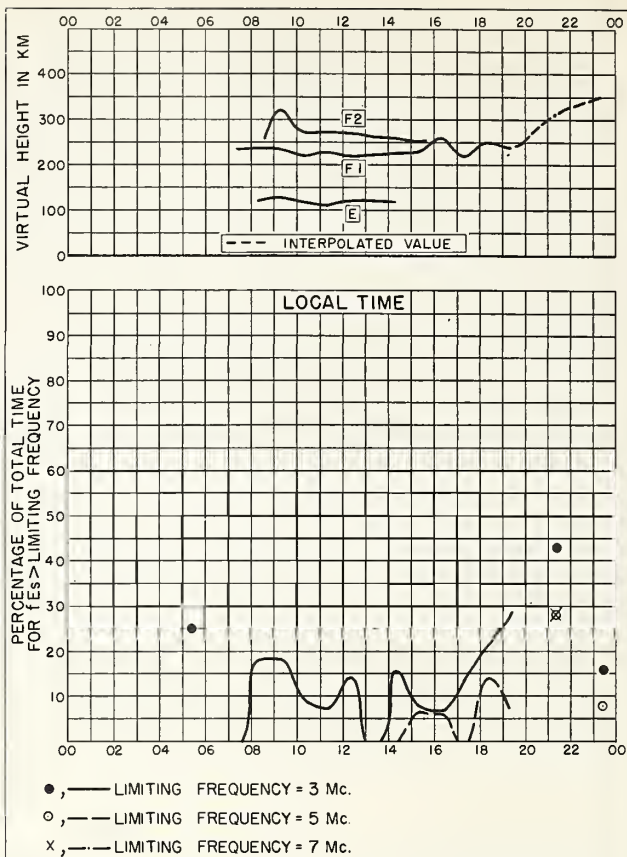


Fig. 114. CAMPBELL I.

APRIL 1951

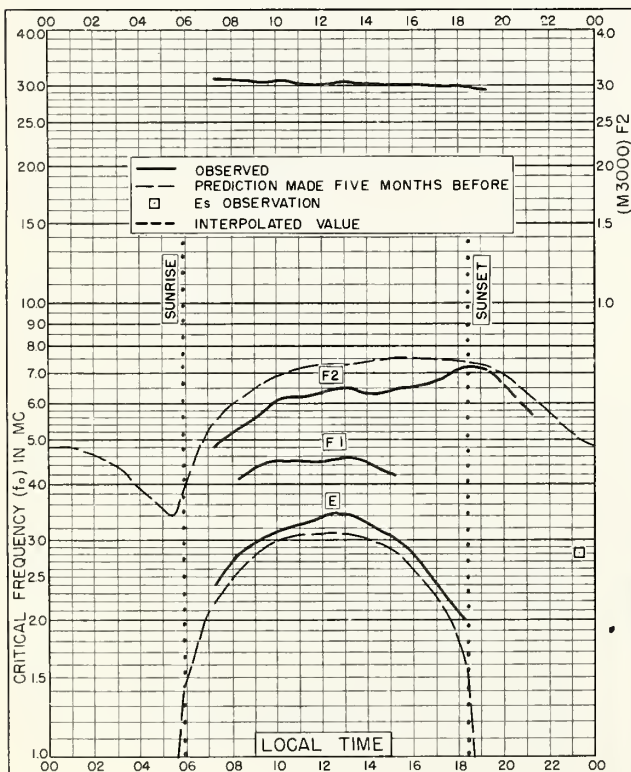


Fig. 115. CAMPBELL I.

52.5°S, 169.2°E

MARCH 1951

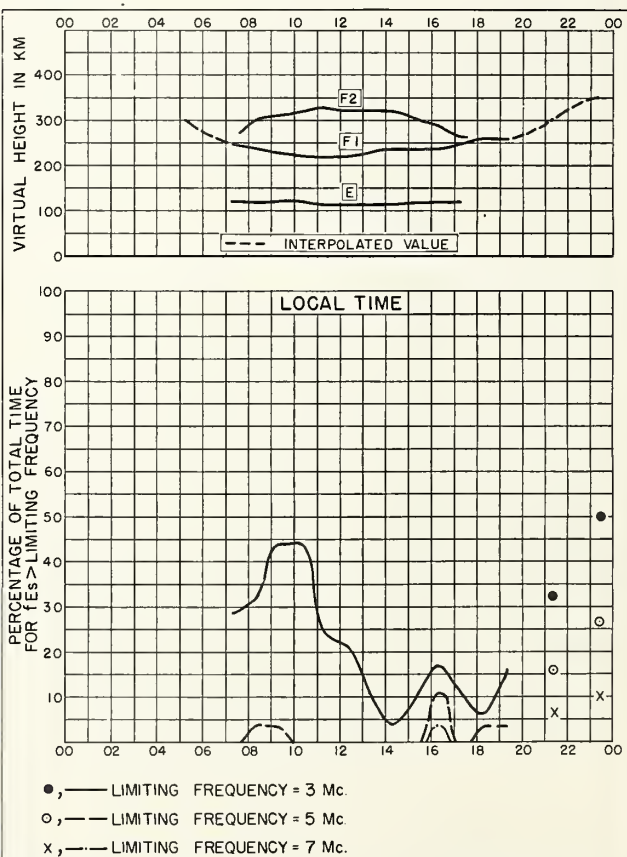


Fig. 116. CAMPBELL I.

MARCH 1951

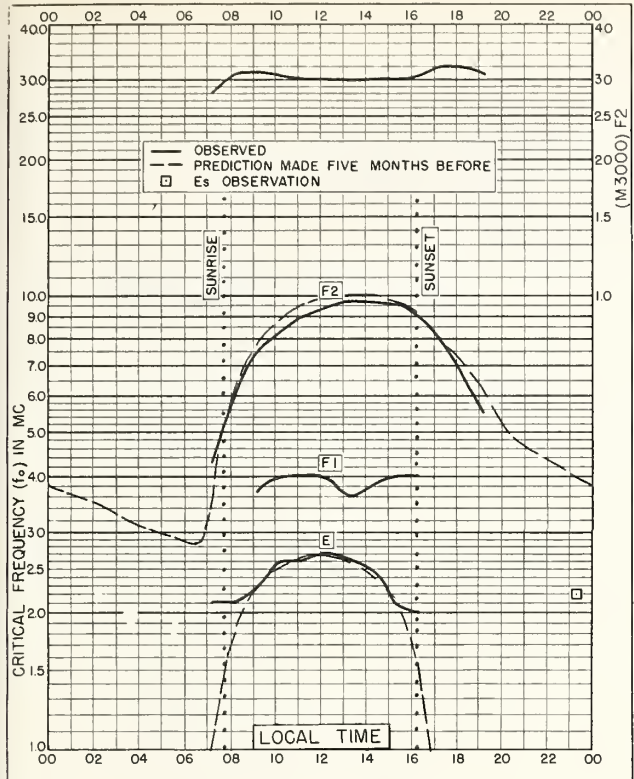
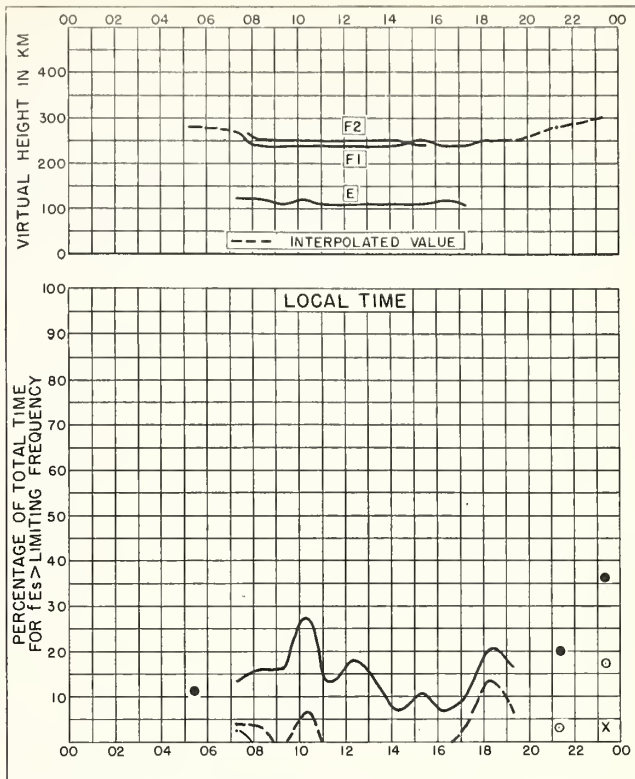


Fig. 117. CAMPBELL I.
52.5°S, 169.2°E
MAY 1950



●, — LIMITING FREQUENCY = 3 Mc.
○, — LIMITING FREQUENCY = 5 Mc.
x, — LIMITING FREQUENCY = 7 Mc.

Fig. 118. CAMPBELL I.
MAY 1950

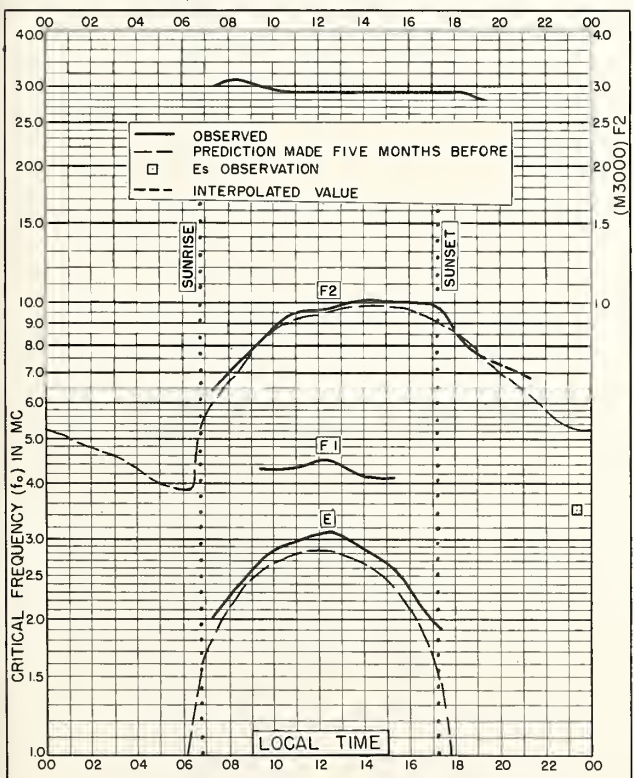
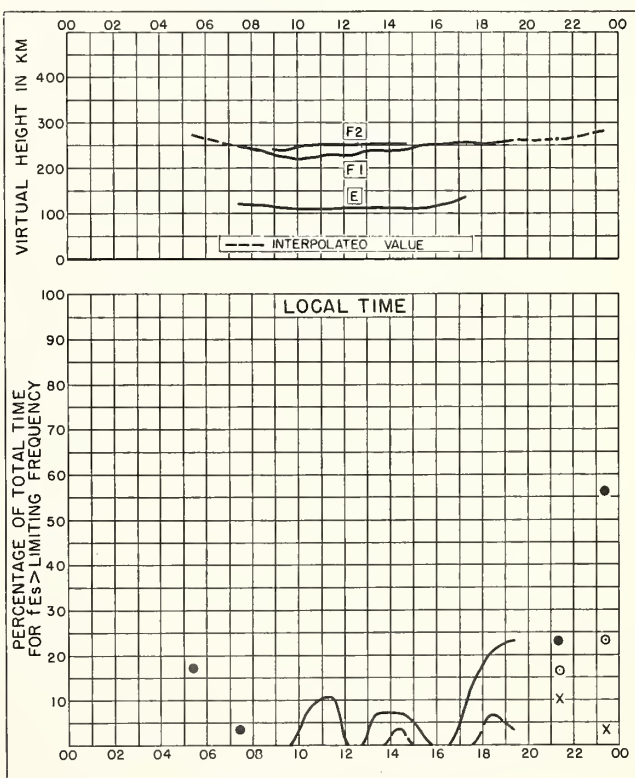


Fig. 119. CAMPBELL I.
52.5°S, 169.2°E
APRIL 1950



●, — LIMITING FREQUENCY = 3 Mc.
○, — LIMITING FREQUENCY = 5 Mc.
x, — LIMITING FREQUENCY = 7 Mc.

Fig. 120. CAMPBELL I.
APRIL 1950

NBS 503

NBS 503

NBS 490

U.S. GOVERNMENT PRINTING OFFICE 303871

Index of Tables and Graphs of Ionospheric Data
in CRPL-F143 (Part A)

	<u>Table page</u>	<u>Figure page</u>
Adak, Alaska		
May 1956.	9	31
Akita, Japan		
February 1956	14	45
Anchorage, Alaska		
April 1956.	10	34
Baguio, P. I.		
March 1956.	12	39
Baker Lake, Canada		
March 1956.	11	38
Buenos Aires, Argentina		
February 1956	15	48
Campbell I.		
May 1951.	18	57
April 1951.	18	58
March 1951.	18	58
May 1950.	18	59
April 1950.	18	59
Capetown, Union of S. Africa		
March 1956.	13	43
February 1956	15	48
Deception I.		
February 1956	15	49
Elisabethville, Belgian Congo		
March 1956.	12	41
Fairbanks, Alaska		
April 1956.	10	34
Falkland Is.		
November 1955	16	52
Formosa, China		
May 1956.	10	33
Ft. Monmouth, New Jersey		
May 1956.	9	32
Graz, Austria		
May 1956.	9	31
Guam I.		
April 1956.	11	36
Huancayo, Peru		
April 1956.	11	37
March 1956.	12	41
Inverness, Scotland		
December 1955	15	50

Index (CRPL-F143 (Part A), continued)

	<u>Table page</u>	<u>Figure page</u>
Johannesburg, Union of S. Africa		
March 1956.	13	42
February 1956	14	47
Leopoldville, Belgian Congo		
March 1956.	12	40
Lindau/Harz, Germany		
March 1956.	11	38
February 1956	13	44
Macquarie I.		
December 1954	16	53
November 1954	17	54
Maui, Hawaii		
April 1956.	10	35
Nairobi, Kenya		
February 1956	14	47
Narsarssuak, Greenland		
April 1956.	10	35
Okinawa I.		
May 1956.	9	32
Point Barrow, Alaska		
January 1956.	15	49
December 1955	15	50
November 1955	16	52
Port Lockroy		
October 1955.	16	53
Puerto Rico, W. I.		
April 1956.	11	36
Reykjavik, Iceland		
February 1956	13	43
San Francisco, California		
February 1956	14	45
Schwarzenburg, Switzerland		
March 1956.	12	39
Singapore, British Malaya		
December 1955	16	51
Slough, England		
December 1955	16	51
Talara, Peru		
April 1956.	11	37
March 1956.	12	40
Tananarive, Madagascar		
June 1954	17	54
May 1954.	17	55
April 1954.	17	55
March 1954.	17	56
February 1954	17	56
January 1954.	18	57

Index (CRPL-F143 (Part A), concluded)

	<u>Table page</u>	<u>Figure page</u>
Tokyo, Japan		
February 1956.	14	46
Tromso, Norway		
April 1956	10	33
Upsala, Sweden		
May 1956	9	30
Wakkanai, Japan		
February 1956.	13	44
Washington, D. C.		
June 1956.	9	30
Watheroo, W. Australia		
March 1956	13	42
Yamagawa, Japan		
February 1956.	14	46

CRPL Reports

[A detailed list of CRPL publications is available from the Central Radio Propagation Laboratory upon request]

Daily:

Radio disturbance forecasts, every half hour from broadcast stations WWV and WWVH of the National Bureau of Standards.

Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

Semiweekly:

CRPL—J. North Atlantic Radio Propagation Forecast (of days most likely to be disturbed during following month).

CRPL—Jp. North Pacific Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:

CRPL—Ja. Semimonthly Frequency Revision Factors For CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL—D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11—499—, monthly supplements to TM 11—499; Dept. of the Navy, DNC 13 () series; Dept. of the Air Force, TO 31—3—28 series). On sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Members of the Armed Forces should address cognizant military office.

CRPL—F. (Part A). Ionospheric Data.
(Part B). Solar-Geophysical Data.

Limited distribution. These publications are in general disseminated only to those individuals or scientific organizations which collaborate in the exchange of ionospheric, solar, geomagnetic or other radio propagation data or in exchange for copies of publications on radio, physics, and geophysics for the CRPL library.

Circulars of the National Bureau of Standards pertaining to Radio Sky Wave Transmission:

NBS Circular 462. Ionospheric Radio Propagation.

NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

NBS Circular 557. Worldwide Radio Noise Levels Expected in the Frequency Band 10 Kilocycles to 100 Megacycles.

These circulars are on sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Members of the Armed Forces should address the respective military office having cognizance of radio wave propagation.

The publication listed above may be obtained without charge from the Central Radio Propagation Laboratory, unless otherwise indicated.
